

Appendix H

Transportation Technical Memorandum



Chicago Red Line Extension Project

Transportation

Technical Memorandum

October 14, 2013
Updated July 27, 2015

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Abbreviations

| | |
|------------|--|
| ADA | Americans with Disabilities Act |
| API | area of potential impact |
| BRT | Bus Rapid Transit |
| CCHD | Cook County Highway Department |
| CDOT | Chicago Department of Transportation |
| CIP | CREATE 75th Street Corridor Improvement Project |
| CN/ME | Canadian National/Metra Electric District |
| CMAP | Chicago Metropolitan Agency for Planning |
| CN | Canadian National |
| CREATE | Chicago Region Environmental and Transportation Efficiency |
| CSS & SBRR | Chicago South Shore & South Bend Railroad |
| CTA | Chicago Transit Authority |
| EIS | Environmental Impact Statement |
| FTA | Federal Transit Administration |
| GIS | Geographic Information System |
| IDOT | Illinois Department of Transportation |
| IHB | Indiana Harbor Belt |
| LOS | level of service |
| ME | Metra Electric |
| MWRD | Metropolitan Water Reclamation District |
| NEPA | National Environmental Policy Act |
| NICTD | Northern Indiana Commuter Transportation District |
| NS | Norfolk Southern |
| Pace | Pace Suburban Bus Service |
| RI | Metra Rock Island |
| RLE | Red Line Extension |
| ROW | right-of-way |
| SAFETEA-LU | Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users |
| UPRR | Union Pacific Railroad |

Section 1 Summary

This technical memorandum analyzes the potential impacts of the Red Line Extension (RLE) Project on transportation facilities that include public transportation, vehicular and freight traffic, bicycle, pedestrians, and parking.

Impacts on the transportation facilities were identified based on the predicted changes from the existing conditions to the horizon year of 2030, using the regional travel demand model. The impacts on transportation facilities were evaluated through a combination of qualitative and quantitative analysis. Section 3 presents the specific methods used to determine impacts. The following paragraphs describe the impacts and proposed mitigation measures for each alternative.

People using public transportation would benefit from the extension of the Red Line south from the 95th Street Terminal. Various bus routes within the project area would be rerouted to complement the rail alternatives and provide a means for connectivity to the expanded service. The extension of the Red Line would provide an alternative mode of travel to reach downtown Chicago (and destinations between downtown Chicago and 95th Street) for people south of the 95th Street Terminal. There would be no permanent adverse impacts on public transportation services for any of the alternatives. Temporary construction impacts on public transportation, including intermittent delays and detours, would occur.

The traffic analysis consisted of analyzing 76 intersections within the area of potential impact (API). Table 1-1 provides a summary of the intersections that would require mitigation measures to minimize the level of impact from any of the build alternatives. At intersections where adverse impacts are expected, potential mitigation measures have been identified to offset the portion of the level of service (LOS) deterioration that is attributable to the RLE Project. After mitigation, there would be no adverse permanent impacts from any of the build alternatives. The minimum acceptable LOS for roadway intersections is “D” for urban areas. Temporary construction impacts on traffic would occur during construction activities. The temporary impacts would be mitigated by following the applicable federal, state, and local requirements for construction activities.

There would be no permanent impacts on freight transportation due to the implementation of any of the build alternatives. There would be temporary impacts due to the construction of Union Pacific Railroad (UPRR) Rail and Halsted Rail Alternatives due to temporary closures of the roadways or highways to erect the aerial structures and superstructures. Railroad flagging would be included where any construction crosses or is adjacent to railroad operations.

There would be no adverse permanent impacts on pedestrians after mitigation for any of the build alternatives. Mitigation measures for pedestrians include the addition of traffic signal or pedestrian refuge islands and/or other pedestrian crossing treatments at the Kensington Avenue stop for the BRT Alternative. Mitigation measures for the UPRR Alternative alignment include

pedestrian crosswalks and/or pedestrian crossing gates at the at-grade railroad crossings near the proposed UPRR Alternative alignment.

Bicycle facilities would not be affected by the implementation of the project alternatives. There would be temporary construction impacts on bicycle facilities for the Halsted Rail Alternative.

There would be no permanent impacts on parking. Minor parking impacts would occur during construction activities for the Halsted Rail Alternative.

Only the UPRR East Option and UPRR West Option have potential for cumulative impacts. With both the UPRR East Option and UPRR West Option, freight traffic would remain on the existing UPRR tracks. Although the project would not increase the number of freight trains, with increased traffic bound for stations (including bus traffic, bicyclists, and pedestrians), delays at the at-grade crossings may increase.

Updated July 27, 2015

In August 2014, based on the technical analysis and public input until then, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. CTA is considering two alignment (route) options of this alternative: the East Option and the West Option. At this time, CTA is also considering only the South Station Option of the 130th Street Station. In late 2014 and early 2015, CTA conducted additional engineering on the East and West Options to refine the East and West Option alignments. Appendix F of this technical memorandum summarizes the refined alignments and any additional or different impacts that would result. The information in Appendix F supersedes information presented in other chapters of this technical memorandum.

Table 1-1: Summary of Mitigated Intersections within the Area of Potential Impact for the Build Alternatives

| ID | Intersection | Existing (2012) | | 2030 Baseline | | 2030 BRT Mitigated | | 2030 UPRR Mitigated | | 2030 Halsted Mitigated | |
|-----|--|-----------------|-----|---------------|-----|--------------------|-----|---------------------|-----|------------------------|-----|
| | | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM |
| | | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | D | F | E | F | NA | NA | NA | NA | E | F |
| 16 | 103rd Street and Halsted Street | E | D | F | D | NA | NA | F | C | F | D |
| 41 | 111th Street and Cottage Grove Avenue | B | C | C | D | C | C | C | C | C | C |
| 42 | 111th Street and Ellis Avenue | C | B | C | C | C | C | NA | NA | NA | NA |
| 52 | 115th Street and Michigan Avenue | B | C | B | D | C | D | B | C | NA | NA |
| 54 | 115th Street and Martin Luther King Drive | D | F | D | F | D | F | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | C | C | D | C | C | D | B | C | D | C |
| 55b | 115th Street and Cottage Grove Avenue East | D | C | E | C | C | B | C | B | B | C |
| 59 | 119th Street and Ashland Avenue | D | F | D | F | NA | NA | D | F | D | F |
| 60 | 119th Street and Halsted Street | C | C | C | C | NA | NA | NA | NA | D | D |
| 61 | 119th Street and Wentworth Avenue | B | B | B | B | NA | NA | B | B | NA | NA |
| 62 | 119th Street and State Street | B | B | B | B | C | B | C | B | NA | NA |
| 63 | 119th Street and Michigan Avenue | A | A | A | A | NA | NA | C | B | NA | NA |
| 64 | 127th Street and Paulina Street | C | C | C | C | NA | NA | B | C | B | C |
| 65 | 127th Street and Marshfield Avenue | C | B | C | C | C | C | C | C | D | D |

| ID | Intersection | Existing (2012) | | 2030 Baseline | | 2030 BRT Mitigated | | 2030 UPRR Mitigated | | 2030 Halsted Mitigated | |
|----|--|-----------------|-----|---------------|-----|--------------------|-----|---------------------|-----|------------------------|-----|
| | | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM |
| | | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS | LOS |
| 66 | 127th Street and Ashland Avenue | C | C | C | C | NA | NA | C | C | C | D |
| 67 | Ashland Avenue and Vermont Avenue | C | C | C | C | C | C | C | C | C | C |
| 68 | 127th Street and Halsted Street | C | C | C | C | C | C | C | D | C | D |
| 69 | Vermont Avenue and Halsted Street | B | B | B | B | NA | NA | NA | NA | D | D |
| 70 | 127th Street and Vermont Avenue and Wallace Street | C | D | D | D | C | C | C | D | C | C |
| 71 | 127th Street and State Street | A | B | B | B | C | C | B | C | D | B |
| 72 | 127th Street and Michigan Avenue | A | B | A | B | NA | NA | B | C | B | C |
| 73 | 130th Street and Indiana Avenue | B | C | C | C | D | C | D | D | C | D |
| 74 | 130th Street and Ellis Avenue | A | A | A | A | NA | NA | B | B | NA | NA |

Notes: BRT = Bus Rapid Transit, UPRR = Union Pacific Railroad, LOS = level of service, NA = Not applicable. Intersection did not require mitigation.

Section 2

Project Description

The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the existing 95th Street Terminal to the vicinity of 130th Street, subject to the availability of funding. The RLE would include four stations. Each station would include bus transfer and parking facilities. This project is one part of the Red Ahead Program to extend and enhance the entire Red Line. The CTA is also planning 95th Street Terminal improvements that are anticipated to be completed prior to the proposed RLE construction.

The project area is 11 miles south of the Chicago central business district (commonly referred to as the Loop) and encompasses approximately 20 square miles. The boundaries of the project area are 95th Street on the north, Ashland Avenue on the west, Stony Island Avenue on the east, and the Calumet-Sag Channel/Little Calumet River and 134th Street on the south. The I-57 Expressway and I-94 Bishop Ford Freeway cross the western and eastern edges of the project area, respectively. Lake Calumet is in the eastern portion of the project area. The project area encompasses parts of nine community areas in the City of Chicago and the eastern section of the Village of Calumet Park. Chicago community areas include Beverly, Washington Heights, Roseland, Morgan Park, Pullman, West Pullman, Riverdale, Hegewisch, and South Deering. The project area comprises residential (primarily single family), industrial (both existing and vacant), transportation (including freight), and commercial development.

The Draft Environmental Impact Statement (EIS) focuses on the following alternatives (shown in Figure 2-1), which emerged from the Alternatives Analysis and the National Environmental Policy Act (NEPA) scoping process:

- No Build Alternative
- Bus Rapid Transit (BRT) Alternative
- UPRR Rail Alternative
 - Right-of-Way (ROW) Option
 - East Option
 - West Option
- Halsted Rail Alternative

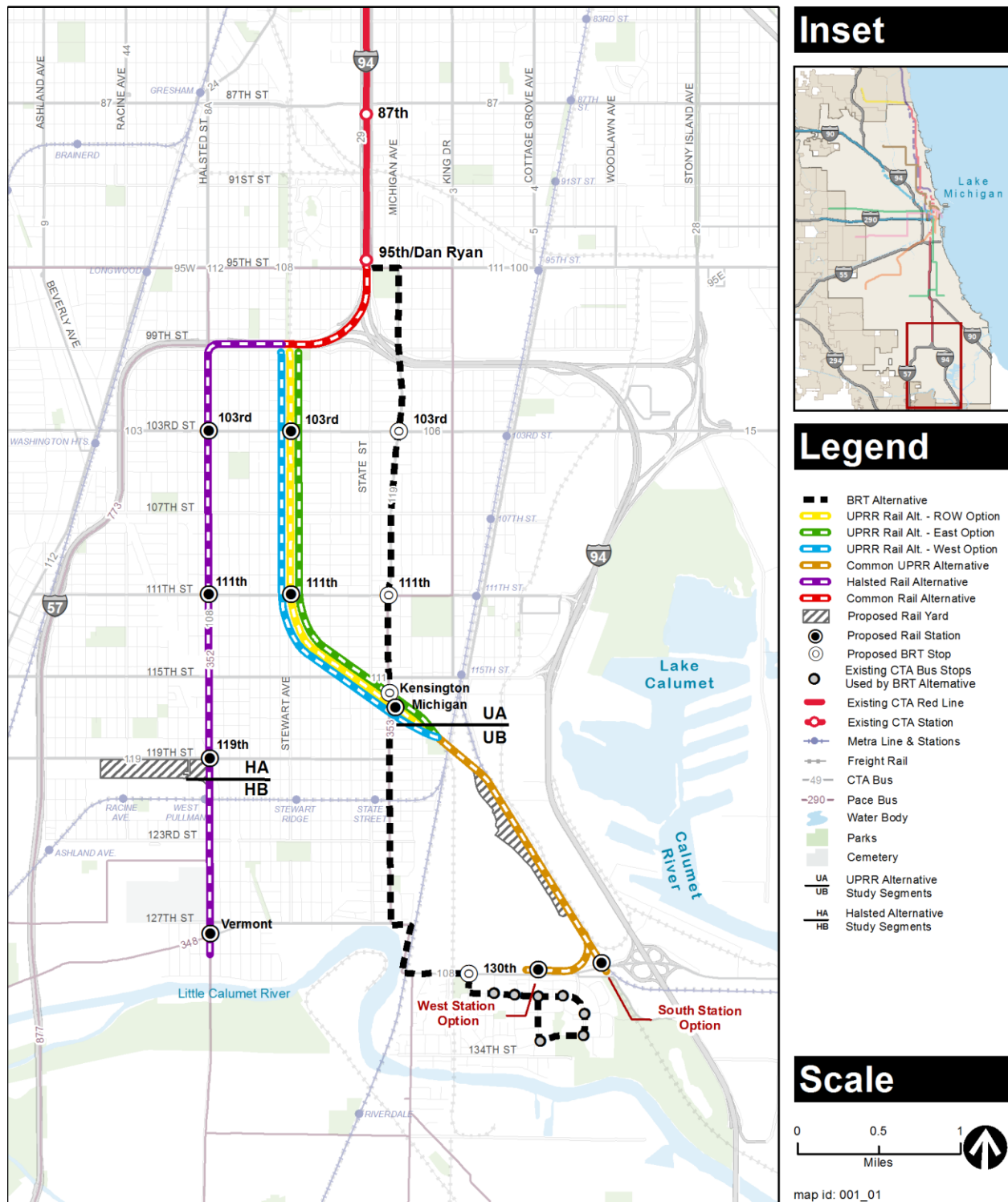


Figure 2-1: Red Line Extension Alternatives

The No Build Alternative is a required alternative as part of the NEPA environmental analysis and is used for comparison purposes to assess the relative benefits and impacts of extending the Red Line. The No Build Alternative is carried into the Draft EIS phase of the project development regardless of its performance versus the build alternatives under consideration. No new infrastructure would be constructed as part of the No Build Alternative other than committed transportation improvements that are already in the Chicago Metropolitan Agency for Planning (CMAP) Fiscal Year 2010–2015 Transportation Improvement Program which includes the improvements to 95th Street Terminal. The Transportation Improvement Program projects within the project area consist of four bridge reconstructions, several road improvement projects including resurfacing and coordination of signal timing on 95th Street, work on Metra's facilities, construction of a bicycle/pedestrian multi-use trail, and preservation of historic facilities. The No Build Alternative includes regular maintenance of existing track and structures, and bus transit service would be focused on the preservation of existing services and projects. All elements of the No Build Alternative are included in each of the other alternatives. Under this alternative, travel times would not improve from existing conditions.

The BRT Alternative (formerly referred to as the Transportation Systems Management Alternative) is a 5.0-mile, limited-stop, enhanced BRT route, which is assumed to operate 24 hours per day between the existing 95th Street Terminal and the intersection of 130th Street and Eberhart Avenue. No dedicated bus lanes would be provided for the BRT Alternative; however, parking lanes would be removed for some portions of the alignment and four stops with improved bus shelters and park & ride facilities would be created at 103rd Street and Michigan Avenue, 111th Street and Michigan Avenue, Kensington Avenue and Michigan Avenue, and 130th Street and Eberhart Avenue. Although BRT service elements would not continue south of the 130th Street stop, the bus route would continue through Altgeld Gardens along the existing route with six stops. The BRT Alternative would be consistent with bus routing changes that may occur as part of improvements to the 95th Street Terminal. Under this alternative, travel times between 130th Street and the Loop would improve over existing conditions.

The UPRR Rail Alternative is a 5.3-mile extension of the heavy rail transit Red Line from its existing 95th Street Terminal to 130th Street, just west of I-94. The Chicago Transit Board designated the UPRR Rail Alternative as the Locally Preferred Alternative at its August 12, 2009 board meeting. This alternative includes construction and operation of new heavy rail transit tracks, mostly in existing transportation corridors. The UPRR Rail Alternative has three options for alignment (ROW, East, and West), all of which would include operation on elevated structure from 95th Street to just past the Canadian National/Metra Electric District (CN/ME) tracks near 119th Street. The alignment would then transition to at-grade through an industrial area with no public through streets, terminating at 130th Street in the vicinity of Altgeld Gardens. Four new stations would be constructed at 103rd Street, 111th Street, Michigan Avenue, and 130th Street. The 130th Street station would be the terminal station, with two options under evaluation: the South Station Option and the West Station Option. A new yard and shop facility would be sited near 120th Street and Cottage Grove Avenue. The bus routes in the vicinity of the UPRR Rail Alternative would be modified to enhance connectivity between the Red Line and the bus network. The hours of operation and service frequency for the UPRR Rail Alternative are assumed

to be the same as for the current Red Line. Under this alternative, travel times between 130th Street and the Loop would improve substantially over existing conditions.

The Halsted Rail Alternative is a 5.0-mile heavy rail transit extension of the existing Red Line. In this alternative, the Red Line would operate on an elevated structure running south from 95th Street along I-57 until Halsted Street. The alignment would then turn south and continue along Halsted Street to the intersection of Halsted Street and Vermont Avenue near 127th Street. This alternative would include four new stations at 103rd Street, 111th Street, 119th Street, and Vermont Avenue. The Vermont Avenue station would be the terminal station. A new yard and shop would be sited west of Halsted Street and between the 119th Street and Vermont Avenue stations. The bus routes in the vicinity of the Halsted Rail Alternative would be modified to enhance connectivity to the Red Line. The hours of operation and service frequency for the Halsted Rail Alternative are assumed to be the same as for the current Red Line. Under this alternative, travel times between 127th Street and the Loop would improve substantially over existing conditions. This alternative would not extend rail service to Altgeld Gardens, which would be served by bus connecting to the Vermont terminal station.

Section 3

Methods for Impact Evaluation

This section describes the process used to conduct a qualitative and quantitative analysis of potential temporary, permanent, and cumulative transportation effects that could result from the construction and operation of the project alternatives.

3.1 Regulatory Framework

Future transit improvements along the project corridor could be financed with a mix of local, state, and federal funds. Accordingly, this transportation analysis was executed in compliance with current Federal Transit Administration (FTA) guidelines, NEPA regulations, and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requirements, as detailed below.

3.1.1 Federal

NEPA requires that federal agencies consider environmental impacts before taking actions that could affect the human environment. Transportation, including public transit, traffic, parking, and bicycle and pedestrian transportation are elements typically assessed in NEPA documentation.

Applicable federal regulation for the analysis of transportation impacts also includes the SAFETEA-LU Public Law 109-59, August 10, 2005. The SAFETEA-LU focuses on reducing traffic congestion, increasing intermodal connectivity, and protecting the environment; SAFETEA-LU gives state and local transportation decision-makers more flexibility over previous legislation for solving transportation problems in their communities (Federal Highway Administration 2005).

3.1.2 State

Illinois state law does not require additional transportation environmental analysis to be performed for proposed projects subject to NEPA.

3.1.3 Local

The City of Chicago, Cook County, and the Village of Calumet Park do not require additional transportation environmental analyses to be performed for proposed projects subject to NEPA. The following local resources were used to understand the regional and local transportation network near the project area.

The CMAP is the planning organization for the Chicago region. CMAP has prepared the *GO TO 2040* Regional Plan (2010) that provides strategies for the regional transportation network. In addition, the City of Chicago and Cook County have developed their own strategies and planning activities for their transportation network.

3.2 Impact Analysis Thresholds

The transportation analysis included both quantitative and qualitative analysis of impacts based on a future baseline year of 2030. The traffic analysis also included quantitative analysis of impacts based on a future construction year of 2026. Where quantitative analyses were performed, accepted impact analysis thresholds were developed with CTA, Chicago Department of Transportation (CDOT), Illinois Department of Transportation (IDOT), and Cook County Highway Department (CCHD). The thresholds were used to establish the level of impact. Thresholds for qualitative analysis were determined based on professional judgment, with potential impacts being generally evaluated at three levels: low, moderate, and high.

3.2.1 Public Transportation

For the purpose of this EIS, a public transportation impact (rail or bus service) would be adverse if it would result in negative changes associated with the following:

- Geographic areas of service and routing
- Travel time
- Frequency and hours of service
- Transit patronage and demand, including transit mode share
- Station/stop access and circulation
- Traffic around stations/stops

Impacts may be positive or negative in nature, and the amount of change would determine whether the impacts would be low, moderate, or high. The determination of low, moderate, or high impacts was based on professional judgment. Moderate to high negative impacts would be considered adverse and substantially adverse, respectively.

3.2.2 Traffic

For the purpose of this EIS, a traffic (passenger or freight vehicle) impact would be substantial (impacts may be positive or negative in nature) if it were to result in a degradation (following mitigation) in peak-hour LOS at any intersection within the API (defined in Section 3.3) which leads to:

- A change in traffic distribution and local circulation patterns
- A change in vehicle occupancy levels
- A change in road capacity
- A change in road traffic volumes

The LOS for roadway intersections typically ranges from A to F (Transportation Research Board 2010) and LOSs are defined for this EIS as follows:

- LOS A represents virtually free flow of traffic with no congestion or delay.
- LOS B represents stable traffic flow, but other vehicles in the flow are noticeable.
- LOS C represents stable flow, but marks the beginning of the range where individual vehicles become substantially affected by interactions with other vehicles in the traffic stream.
- LOS D represents high density of traffic but stable flow.
- LOS E represents operating conditions at or near capacity level. All speeds are reduced to a low but relatively uniform flow.
- LOS F represents a breakdown in the operating conditions resulting in substantial congestion and delay.

A change in intersection LOS (with mitigation) from LOS A, B, C, or D to LOS E or F would result in an adverse or substantially adverse impact, respectively. If an intersection operates with LOS E or F for the No Build Alternative and would remain LOS E or F with a build alternative, no impact results.

3.2.3 Freight Transportation

The freight transportation analysis included a qualitative discussion of impacts on freight rail traffic specific to the build alternatives that involve the UPRR and Canadian National (CN) Railroad ROWs. The qualitative analysis broadly discusses the potential impacts and summarizes the coordination activities conducted with UPRR and CN.

3.2.4 Bicycle

For the purpose of this EIS, a bicycle impact would be adverse if it were to result in a disruption of existing or planned bicycle pathways or bicycle parking facilities.

3.2.5 Pedestrians

For the purpose of this EIS, a pedestrian impact would be adverse if it were to result in the following:

- Disruption of existing or planned pedestrian pathway
- Limited pedestrian access to proposed station entrances
- Existence of non-ADA (Americans with Disabilities Act) compliant pedestrian pathways to proposed station entrances

3.2.6 Parking

Potential parking impacts include changes in parking supply as a result of transit facility construction/service expansion, addition of park & ride facilities, and removal of existing parking spaces. Recent criteria regarding parking impacts were not available; however, guidance regarding parking impacts is provided in the United States Department of Transportation, Urban Mass Transportation Administration (now FTA) Circular C 5620.1 “Guidelines for Preparing Environmental Assessments,” dated October 16, 1979. The FTA circular was used as guidance for determining the potential for impacts and the intensity of those impacts. For the purpose of this EIS, a parking impact would be adverse if it were to result in the following:

- Reduction in parking spaces by 10 to 50 spaces. (A reduction by 50 or more parking spaces would be a substantially adverse impact.)
- Substantial reduction in accommodation for future programs requiring parking spaces, such as car sharing.
- Reduction in frequently used existing transit parking and park & ride capacity.
- Inadequate parking capacity for proposed transit service.

3.3 Area of Potential Impact

The project area used in the Alternatives Analysis is situated 11 miles south of the downtown Chicago (commonly referred to as the “Loop”) and encompasses approximately 20 square miles. The boundaries of the project area are 95th Street on the north, Ashland Avenue on the west, Stony Island Avenue on the east, and the Calumet-Sag Channel/Little Calumet River and 134th Street on the south. The I-57 Expressway and I-94 Bishop Ford Freeway traverse the western and eastern edges of the project area, respectively. Lake Calumet is in the eastern portion of the project area. The Red Line currently terminates at the 95th Street Terminal. Figure 3-1 shows the API.

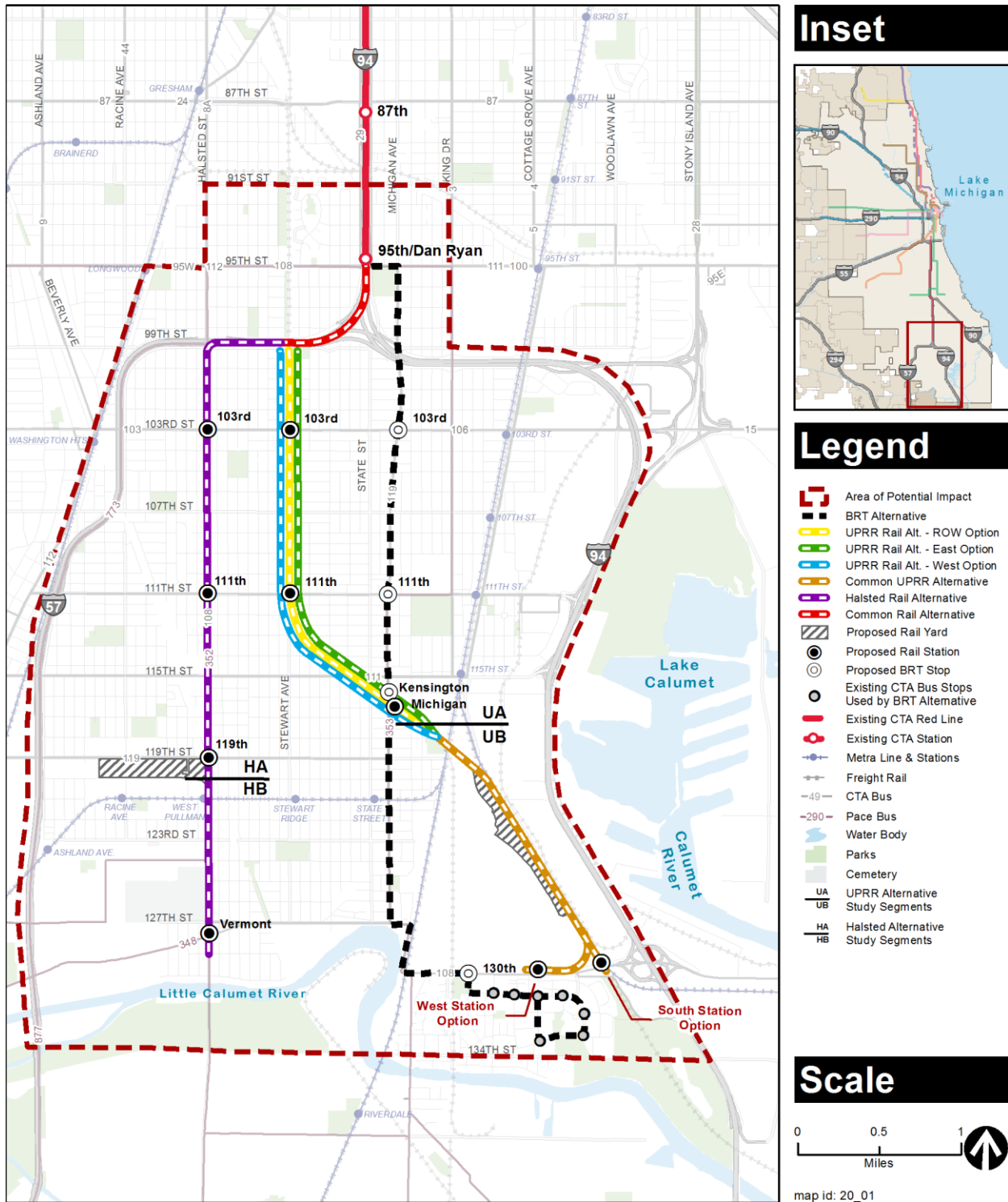


Figure 3-1: Area of Potential Impact

The API boundaries are as follows:

- On the north by 91st Street (four blocks north of the existing 95th Street Terminal);
- On the south by a varying boundary that includes Jackson Street/134th Street (four blocks south of both the UPRR Rail Alternative and Halsted Rail Alternative) station locations;
- On the east by a varying boundary that includes Martin Luther King Drive, Michigan Avenue, and I-94 (from the north to south);
- On the west by a varying boundary that includes Halsted Street, South Vincennes Avenue, and I-57 (from north to south).

The API interfaces with the CTA rail Red Line, Metra commuter rail lines, Pace bus routes, and numerous CTA bus routes. The project area also includes the 98th Street Yard and Shop, which is south of 95th Street and has a capacity of 234 rail cars.

The alternative alignments run through a number of neighborhoods in the southern section of the City of Chicago and the Village of Calumet Park. Community areas in the City of Chicago that may be affected by the improvements include Washington Heights, Morgan Park, Roseland, Pullman, West Pullman, and Riverdale.

3.4 Methods

Transportation data used in the analysis of transportation impacts was collected from the following state and local agencies:

- CTA
- CDOT
- CMAP
- CCHD
- IDOT
- Metra Commuter Rail
- Northern Indiana Commuter Transportation District (NICTD)
- Pace Suburban Bus Service
- Regional Transportation Authority
- UPRR

3.4.1 Public Transportation

A description of the existing conditions within the API was developed for the public transportation environment (rail and bus services) by compiling and reviewing CTA rail, CTA bus, Metra commuter rail, and Pace bus service data. The following public transportation data was compiled and reviewed for this purpose:

- Geographic areas of service and routes
- Travel time
- Frequency and hours of service
- Ridership levels
- Transit mode share
- Station/stop locations

Project horizon year (2030) ridership estimates were projected using the Chicago New Starts forecasting model, which was developed in coordination with CMAP. CTA developed bus service plans for each build alternative that realign existing bus services to serve each alternative.

3.4.2 Traffic

Seventy-six study intersections were identified for traffic analysis within the API, as listed in Table 3-1 and presented on Figure 3-2. Existing traffic count data from CDOT, CMAP, and IDOT along with new manual traffic counts were compiled to develop peak-hour turning movements to understand the existing traffic conditions within the project area, as shown on Figure 3-3. At several minor intersections, counts were not conducted. Volumes were estimated, per CDOT direction, using counts at adjacent intersections along with simple distribution assumptions. Intersections with estimated turning movement volumes are indicated on Figure 3-3. The following traffic data was compiled and reviewed for this purpose:

- Traffic distribution and local circulation patterns
- Vehicle occupancy levels
- Road capacity levels
- Road peak-hour traffic volumes
- Intersection lane geometry and traffic signal timing plans
- Planned roadway improvements

The above data was used to calculate intersection LOS, using Synchro 7 isolated intersection analysis. Peak-hour traffic volumes and lane geometry used for the intersection LOS analysis are included in Appendix A.

Table 3-1: Area of Potential Impact Study Intersections

| Intersection ID | Intersection | Control Type | Jurisdiction | Freeway Ramp |
|-----------------|--|--------------|--------------|--------------|
| 1 | 95th Street and Wentworth Avenue | Signalized | IDOT/CDOT | No |
| 2 | 95th Street and Lafayette Avenue | Signalized | IDOT/CDOT | Yes |
| 3 | 95th Street and State Street | Signalized | IDOT/CDOT | Yes |
| 4 | 95th Street and Michigan Avenue | Signalized | IDOT/CDOT | No |
| 5 | 98th Place and Halsted Street | Signalized | IDOT/CDOT | Yes |
| 6 | 99th Street and Halsted Street | Signalized | IDOT/CDOT | Yes |
| 7 | 98th Place and Wentworth Avenue | Signalized | IDOT/CDOT | Yes |
| 8 | 99th Street and Wentworth Avenue | Signalized | IDOT/CDOT | No |
| 9 | 99th Street and State Street | Signalized | CDOT | No |
| 10 | 99th Street and Michigan Avenue | Signalized | IDOT/CDOT | Yes |
| 11 | 99th Place and Martin Luther King Drive | Signalized | IDOT/CCHD | No |
| 12 | 100th Street and Martin Luther King Drive | Signalized | CCHD/CDOT | No |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | CCHD/CDOT | No |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | CCHD/CDOT | No |
| 15 | 103rd Street and Morgan Street | Signalized | CCHD/CDOT | No |
| 16 | 103rd Street and Halsted Street | Signalized | IDOT/CCHD | No |
| 17 | 103rd Street and Normal Avenue | Signalized | CCHD/CDOT | No |
| 18 | 103rd Street and Wentworth Avenue | Signalized | CCHD/CDOT | No |

| Intersection ID | Intersection | Control Type | Jurisdiction | Freeway Ramp |
|-----------------|---|--------------|--------------|--------------|
| 19 | 103rd Street and State Street | Signalized | CCHD/CDOT | No |
| 20 | 103rd Street and Michigan Avenue | Signalized | CCHD/CDOT | No |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | CCHD/CDOT | No |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | CCHD/CDOT | No |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | IDOT/CDOT | No |
| 24 | 107th Street and Halsted Street | Signalized | IDOT/CDOT | No |
| 25 | 107th Street and Wentworth Avenue | Signalized | CDOT | No |
| 26 | 107th Street and State Street | Signalized | CDOT | No |
| 27 | 107th Street and Michigan Avenue | Signalized | CDOT | No |
| 28 | 107th Street and Martin Luther King Drive | Signalized | CCHD/CDOT | No |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | CCHD/CDOT | No |
| 30 | 111th Street and Marshfield Avenue | Signalized | IDOT/CDOT | Yes |
| 31 | 111th Street and Hamlet Avenue | Signalized | IDOT | Yes |
| 32 | 112th Place and Marshfield Avenue | Signalized | IDOT/CDOT | Yes |
| 33 | 112th Place and Hamlet Avenue | Signalized | IDOT/CDOT | Yes |
| 34 | 111th Street and Halsted Street | Signalized | IDOT/CCHD | No |
| 35 | 111th Street and Normal Avenue | Signalized | CCHD/CDOT | No |
| 36 | 111th Street and Wentworth Avenue | Signalized | CCHD/CDOT | No |
| 37 | 111th Street and State Street | Signalized | CCHD/CDOT | No |
| 38 | 111th Street and Michigan Avenue | Signalized | CCHD/CDOT | No |
| 39 | 111th Street and Indiana Avenue | Signalized | CCHD/CDOT | No |

| Intersection ID | Intersection | Control Type | Jurisdiction | Freeway Ramp |
|-----------------|--|--------------|--------------|--------------|
| 40 | 111th Street and Martin Luther King Drive | Signalized | CCHD | No |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | IDOT/CCHD | No |
| 42a | 111th Street and Langley Avenue | Signalized | CCHD | No |
| 42b | 111th Street and Ellis Avenue | Signalized | CCHD | No |
| 43 | 111th Street and Doty Avenue | Signalized | IDOT/CDOT | No |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | IDOT | Yes |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | IDOT | Yes |
| 46 | 115th Street and Marshfield Avenue | Signalized | CDOT | No |
| 47 | 115th Street and Ashland Avenue | Signalized | IDOT/CDOT | No |
| 48 | 115th Street and Racine Avenue | Signalized | IDOT/CDOT | No |
| 49 | 115th Street and Halsted Street | Signalized | IDOT | No |
| 50 | 115th Street and Wentworth Avenue | Signalized | CDOT | No |
| 51 | 115th Street and State Street | Signalized | CCHD/CDOT | No |
| 52 | 115th Street and Michigan Avenue | Signalized | CCHD/CDOT | No |
| 53 | 115th Street and Indiana Avenue | Signalized | CCHD/CDOT | No |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | CCHD | No |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | CCHD/CDOT | No |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | CCHD/CDOT | No |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | IDOT | Yes |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | IDOT | Yes |

| Intersection ID | Intersection | Control Type | Jurisdiction | Freeway Ramp |
|-----------------|--|--------------|--------------------|--------------|
| 58 | 119th Street and Marshfield Avenue | Signalized | IDOT/CDOT | Yes |
| 59 | 119th Street and Ashland Avenue | Signalized | IDOT/CDOT | Yes |
| 60 | 119th Street and Halsted Street | Signalized | IDOT/CDOT | No |
| 61 | 119th Street and Wentworth Avenue | Signalized | CDOT | No |
| 62 | 119th Street and State Street | Signalized | IDOT/CCHD/ CDOT | No |
| 63 | 119th Street and Michigan Avenue | Signalized | CDOT | No |
| 64 | 127th Street and Paulina Street | Signalized | IDOT | Yes |
| 65 | 127th Street and Marshfield Avenue | Signalized | IDOT | Yes |
| 66 | 127th Street and Ashland Avenue | Signalized | IDOT | No |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | IDOT | No |
| 68 | 127th Street and Halsted Street | Signalized | IDOT | No |
| 69 | Vermont Avenue and Halsted Street | Signalized | IDOT | No |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | IDOT/CDOT | No |
| 71 | 127th Street and State Street | Signalized | IDOT | No |
| 72 | 127th Street and Michigan Avenue | Signalized | IDOT/CDOT | No |
| 73 | 130th Street and Indiana Avenue | Signalized | IDOT | No |
| 74 | 130th Street and Ellis Avenue | Signalized | IDOT/CDOT | No |

Note: IDOT - Illinois Department of Transportation; CCHD - Cook County Highway Department; CDOT - Chicago Department of Transportation

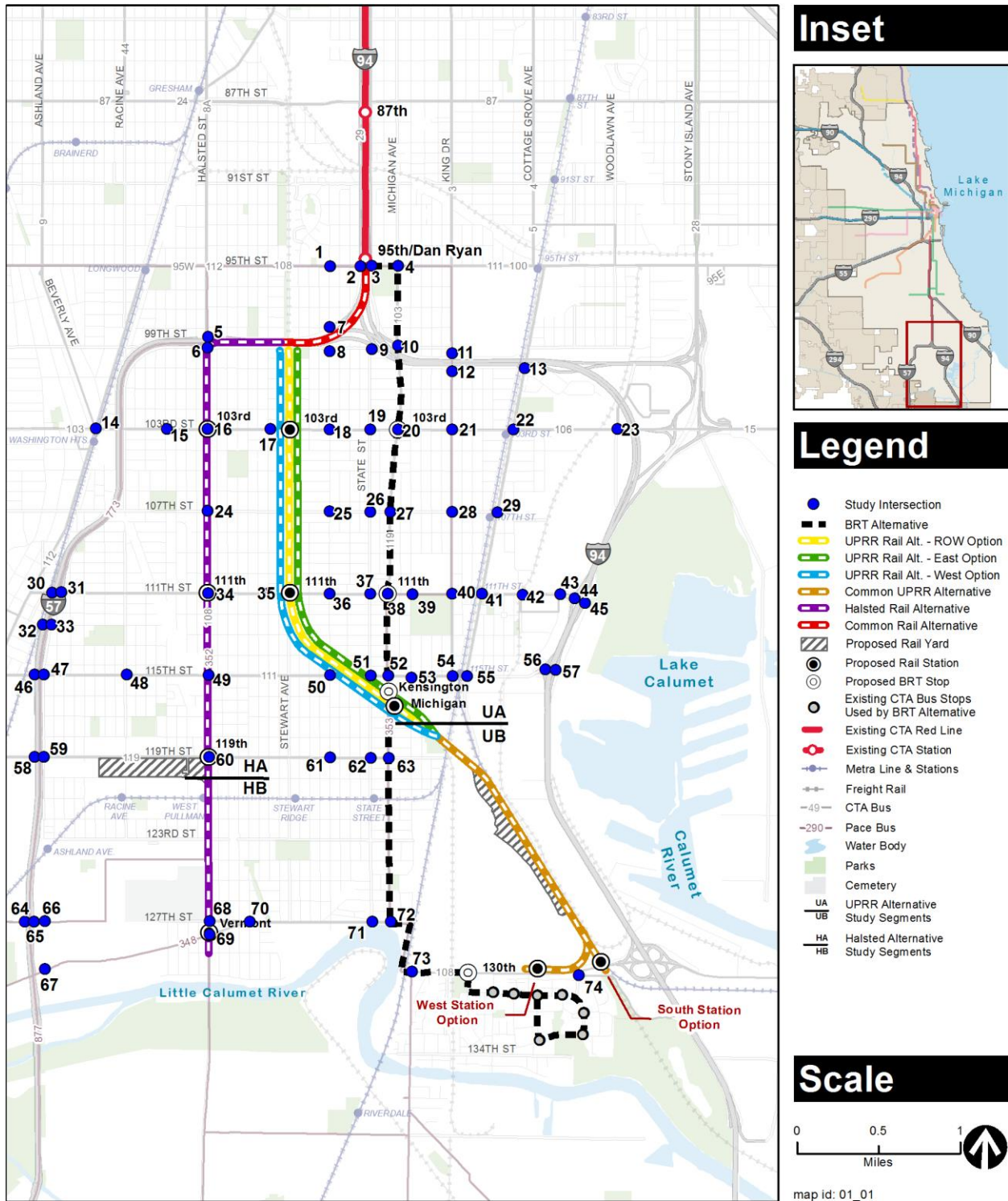


Figure 3-2: Area of Potential Impact Study Intersections

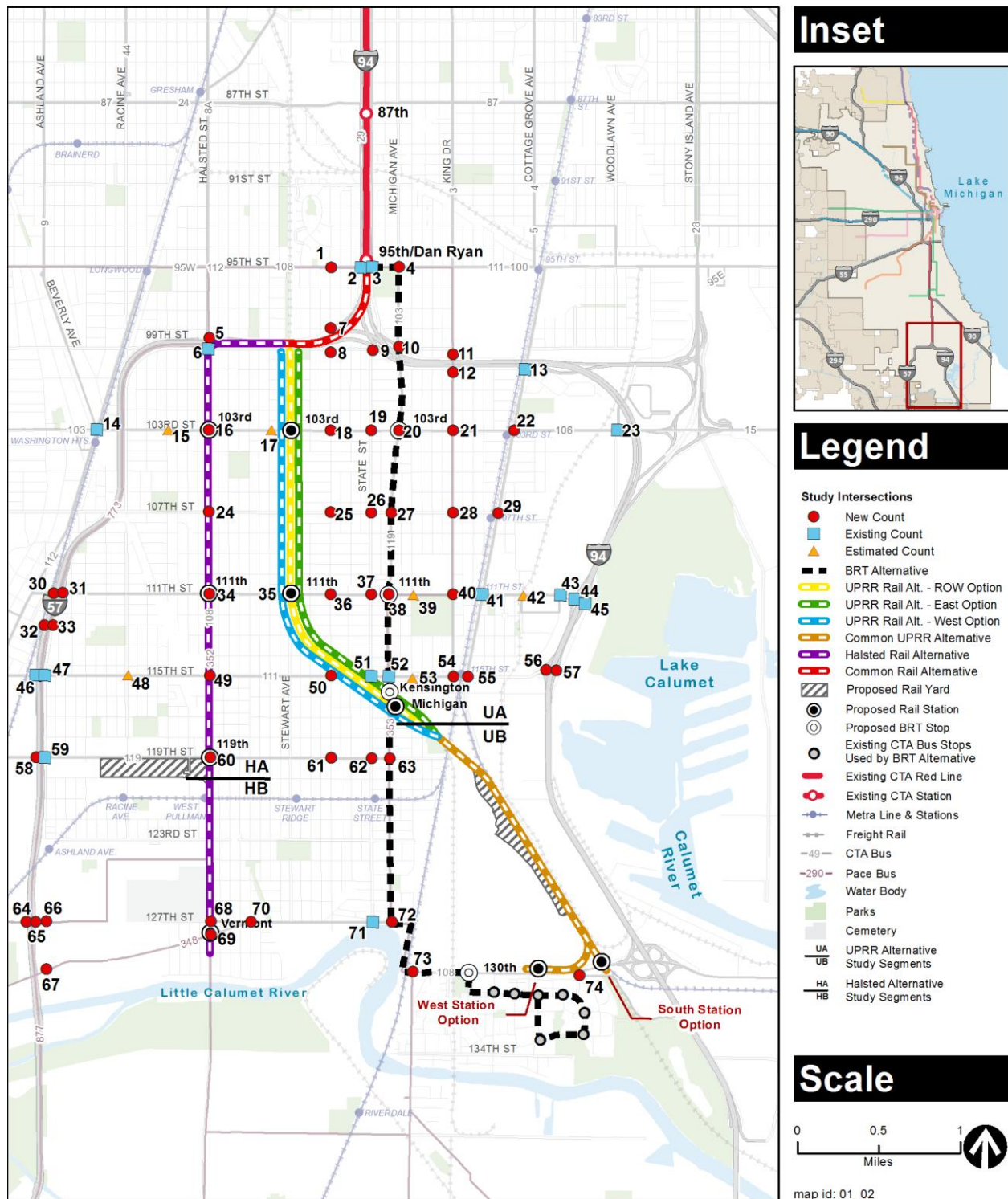


Figure 3-3: Area of Potential Impact Study Intersection Traffic Counts

One future base year model run was performed to simulate project horizon year (2030) conditions without the project (i.e., the No Build Alternative). Data from CMAP's 2030 regional travel demand model was used to develop "no-project" intersection-level traffic projections. These "no-project" traffic projections accounted for the background growth in traffic due to additional regional and subregional land use development and population growth. To simulate project construction year (2026) conditions without the project, background traffic growth was interpolated between existing year (2012) and horizon year (2030) No Build Alternative conditions. The No Build Alternative traffic projections served as the baseline for evaluating the future "with project," (i.e., the build alternatives). The future build alternative conditions included the introduction of park & ride automobile trips to the proposed stations and an overall decrease in project area traffic as a result of trip diversions to transit. Existing and planned lane geometry and traffic signal timing plans were used for the analysis of No Build Alternative and build alternative conditions.

Using Institute of Transportation Engineers trip generation rates (Volume 2, Transit Station with Parking) and trip distribution assumptions from the RLE Alternatives Analysis Traffic Impacts Reports (CTA 2009b and CTA 2009c), the build alternative-generated trips were manually added to the No Build Alternative traffic projections to develop the build alternative traffic volumes. The build alternative intersection LOS analysis was conducted for the study intersections for each alternative. Appendix A includes the build alternative trip generation and trip distribution assumptions used for the intersection LOS analysis.

3.4.3 Freight Transportation

Coordination was conducted with the UPRR regarding the build alternatives that would directly affect the UPRR ROW. Through the coordination process, potential impacts were identified and are qualitatively discussed and presented in this technical memorandum.

3.4.4 Bicycle Facilities

A description of the existing conditions (the affected environment) for bicycles was developed by reviewing the existing and proposed bicycle facilities for the City of Chicago and the *Chicago Streets for Cycling Plan 2020* (City of Chicago 2012c). IDOT's 2012 bicycle map was also used to develop the description of existing conditions for bicycle facilities.

The existing and proposed bicycle facilities were plotted on maps showing the build alternatives. The relationship of the bicycle facilities to the proposed stations in each build alternative was evaluated. The proposed CTA stations would include bicycle parking. The analysis also included an assessment of whether the proposed station locations would conform to the objectives of the bicycle plans for an area within a ½-mile radius of the stations.

3.4.5 Pedestrians

A description of the existing conditions (the affected environment) for pedestrians was developed by compiling and reviewing data from aerial images, Chicago GIS data, and the *Chicago Pedestrian Plan* (City of Chicago 2012b). Pedestrian facilities within immediate area of the

proposed station locations were reviewed for ADA accessibility and conformity to transit station planning.

3.4.6 Parking

A description of the existing parking conditions (the affected environment) was developed through field observations, community resources, and aerial imagery. Using the No Build Alternative as the baseline, an analysis was conducted to determine the extent to which the proposed alternatives would affect on-street parking and parking facilities (off-street) through construction limit encroachment or displacement.

Parking capacity near each of the proposed stations and at the park & ride facilities was reviewed for potential impacts on the surrounding neighborhoods.

Section 4

Affected Environment

This section describes the existing conditions of the transportation facilities within the API. The API includes transit facilities, including rail and bus, expressways, regional arterials, truck routes, intermodal connectors, secondary arterials, local streets, and bicycle and pedestrian facilities. Expressways within the API include I-57 and I-94. Halsted Street is the only north-south arterial road that crosses the Calumet-Sag Channel.

The CTA Red Line service currently ends at the 95th Street Terminal. Customers accessing the station by bus experience measurable delays resulting from poor performance of the roadway network. Difficulty reaching the station by alternative modes of transportation isolates residents and results in lengthy travel times by both auto and transit to jobs north of 95th Street, including the major employment centers in downtown Chicago. According to the American Community Survey the average travel time to work for residents within the project area is 39 minutes. The average commute time in the Chicago region¹ is 32 minutes. The existing travel time from 130th Street to the 95th Street Terminal is 33 minutes and 32 minutes from the 95th Street Terminal to Clark/Division (AECOM 2009). The limited transit services in the project area and complex transfers to reach the 95th Street Terminal make commute times to downtown Chicago area more than an hour for some residents. Many of the residents, 10 percent in 2010, do not own a car and depend on transit for mobility (American Community Survey 2010). The home-based work transit mode share was 25 percent in 2010 (American Community Survey 2010).

Substantial expressway congestion occurs within and surrounding the API. The expressway network was at or over capacity during the morning peak periods in 2010 and congestion is expected to worsen by 2030. (See Figure 4-3 and Figure 4-4.) Arterial street reliability is compromised by delays from at-grade freight railroad crossings, affecting travel times to the 95th Street Terminal. Short traffic delays are experienced due to the Metra Electric (ME) District commuter trains that operate at-grade and cross several arterials in the API.

The following sections provide additional details on the existing conditions for each transportation mode within the API.

4.1 Public Transportation

The existing public transportation systems in use within the API are CTA rail service, CTA bus routes, Pace bus routes, and commuter rail service provided by Metra. The following public transportation services are within the API:

¹ The Chicago region is the seven county area for which CMAP provides regional planning. The counties include Cook, DuPage, Lake, Kane, Kendall, McHenry, and Will counties.

- CTA Red Line
- CTA bus routes: #3, #8A, #9, #28, #29, #34, #95E, #95W, #100, #103, #106, #108, #111, #112, #115, #119, #N5
- Pace bus routes: #348, #352, #353, #359, #381
- Metra: ME District Mainline, ME District Blue Island Branch, RI District Mainline

Figure 4-1 shows the existing bus routes provided by CTA and Pace. The Metra routes and station locations are also shown on Figure 4-1. The following sections provide a more detailed description of the existing public transportation services.

NICTD trains pass through the API but NICTD has no stops within the API.

4.1.1 CTA Rail Service

CTA currently provides rail service within the northern boundary of the API. The Red Line 95th Street Terminal is the only CTA rail station within the API. The 95th Street Terminal is the southernmost CTA rail station. A total of 18 bus routes serve the terminal, many of which serve residents living within the boundaries of the API. The 2012 average weekday ridership for this station was approximately 13,390 based on the *October 2012 Monthly Ridership Report* (CTA 2012). Travel time from 95th Street Terminal to Clark/Division is 33 minutes. The frequency of service during peak periods is 5 minutes, and service is provided around the clock.

4.1.2 CTA and Pace Bus Services

CTA and Pace bus services are provided on east/west and north/south thoroughfares in the API, with 16 CTA and 6 Pace bus routes operating within the API (not including night bus routes). Of those bus routes, 18 serve the 95th Street Terminal on the Red Line. Table 4-1 provides a summary of the existing bus routes within the API. Table 4-1 also indicates which routes serve the 95th Street Terminal. Two columns of ridership data are presented: average weekday for the calendar year 2012 and maximum average monthly weekday ridership for the 12 months from May, 2012 to April, 2013. (Starting in May, 2013, the Red Line Reconstruction project changed ridership patterns into the 95th Street Terminal.) In December, 2012, CTA split the #111 into two routes: the #111 111th/King Drive and the #115 Pullman/115th, both of which serve the 95th Street Terminal. Ridership data for these two routes is only provided starting in January, 2013, the first full month following the route split. Table 4-2 provides weekday hours of service and headways (time between buses) in peak hours for CTA bus service.

Table 4-1: Existing Bus Route Information within the Area of Potential Impact

| Route Number and Name | 2012 Average Weekday Ridership | Maximum Monthly Average Weekday Ridership (May 2012 to April 2013) | Serves 95th Street Terminal |
|---------------------------------------|--------------------------------|---|-----------------------------|
| #3 King Drive | 22,418 | 24,205 | N |
| #8A South Halsted | 4,042 | 4,416 | N |
| #9 Ashland | 31,565 | 33,689 | Y |
| #28 Stony Island | 5,251 | 8,290 | N |
| #29 State | 15,212 | 16,341 | Y |
| #34 South Michigan | 6,198 | 6,648 | Y |
| #95E 93rd/95th | 4,904 | 5,489 | Y |
| #95W West 95th | 4,730 | 5,037 | Y |
| #100 Jeffery Manor Express | 950 | 1,195 | Y |
| #103 West 103rd | 3,484 | 3,920 | Y |
| #106 East 103rd | 2,259 | 2,883 | Y |
| #108 Halsted/95th | 2,050 | 2,373 | Y |
| #111 111th/King Drive | | 3,847 | Y |
| #112 Vincennes/111th | 3,008 | 3,441 | Y |
| #115 Pullman/115th | | 3,765 | Y |
| #119 Michigan/119th | 5,928 | 6,388 | Y |
| #348 Harvey - Riverdale - Blue Island | 368 | 480 | N |
| #352 Halsted | 6,294 | 6,913 | Y |
| #353 95th - Riverdale-Homewood | 2,874 | 3,193 | Y |
| #359 Robbins/South Kedzie Avenue | 1,590 | 1,778 | Y |
| #381 95th Street | 3,464 | 4,189 | Y |
| #395 CTA 95th - UPS | 442 | 506 | Y |

Notes:

- Only months since January 2013 are shown for #111 and #115 due to route change in December 2012.
- Maximum monthly average weekday ridership is based on the 12-month period from May 2012 to April 2013. In May 2013, Red Line (Dan Ryan) reconstruction changed ridership patterns during construction.
- #9 Ashland serves the 95th Street Terminal only with the Night Owl Service.
- Night service route #N5 is not included in the above table.
- Service to the 95th Street Terminal is based on route maps current as of July 31, 2013.
- Source: May 2012 to April 2013 CTA Ridership Reports and RTAMS Pace Ridership dataset.

Table 4-2: Existing CTA Bus Service Hours and Peak Headways

| Route Number and Name | Weekday Hours of Service | Headway in Peak Hours (minutes) |
|----------------------------|--------------------------|---------------------------------|
| #3 King Drive | 4:45a-11:05p | 3-4 |
| #8A South Halsted | 6:00a-8:40p | 5-10 |
| #9 Ashland | 24 hours | 6-10 |
| #28 Stony Island | 5:40a-10:10p | 6-13 |
| #29 State | 4:00a-12:30a | 9-10 |
| #34 South Michigan | 24 hours | 12 |
| #95E 93rd/95th | 4:50a-12:10a | 10 |
| #95W West 95th | 4:30a-12:25a | 18-20 |
| #100 Jeffery Manor Express | Peak Periods Only | 16-20 |
| #103 West 103rd | 4:35a-11:20p | 15 |
| #106 East 103rd | 4:45a-10:30p | 14-20 |
| #108 Halsted/95th | 4:10a-12:55a | 11 |
| #111 111th/King Drive | 4:35a-11:05p | 10-15 |
| #112 Vincennes/111th | 4:30a-10:20p | 10-15 |
| #115 Pullman/115th | 4:25a-11:15p | 11-14 |
| #119 Michigan/119th | 4:00a-1:00a | 12 |

Notes:

- Service to the 95th Street Terminal is based on route maps current as of July 31, 2013.

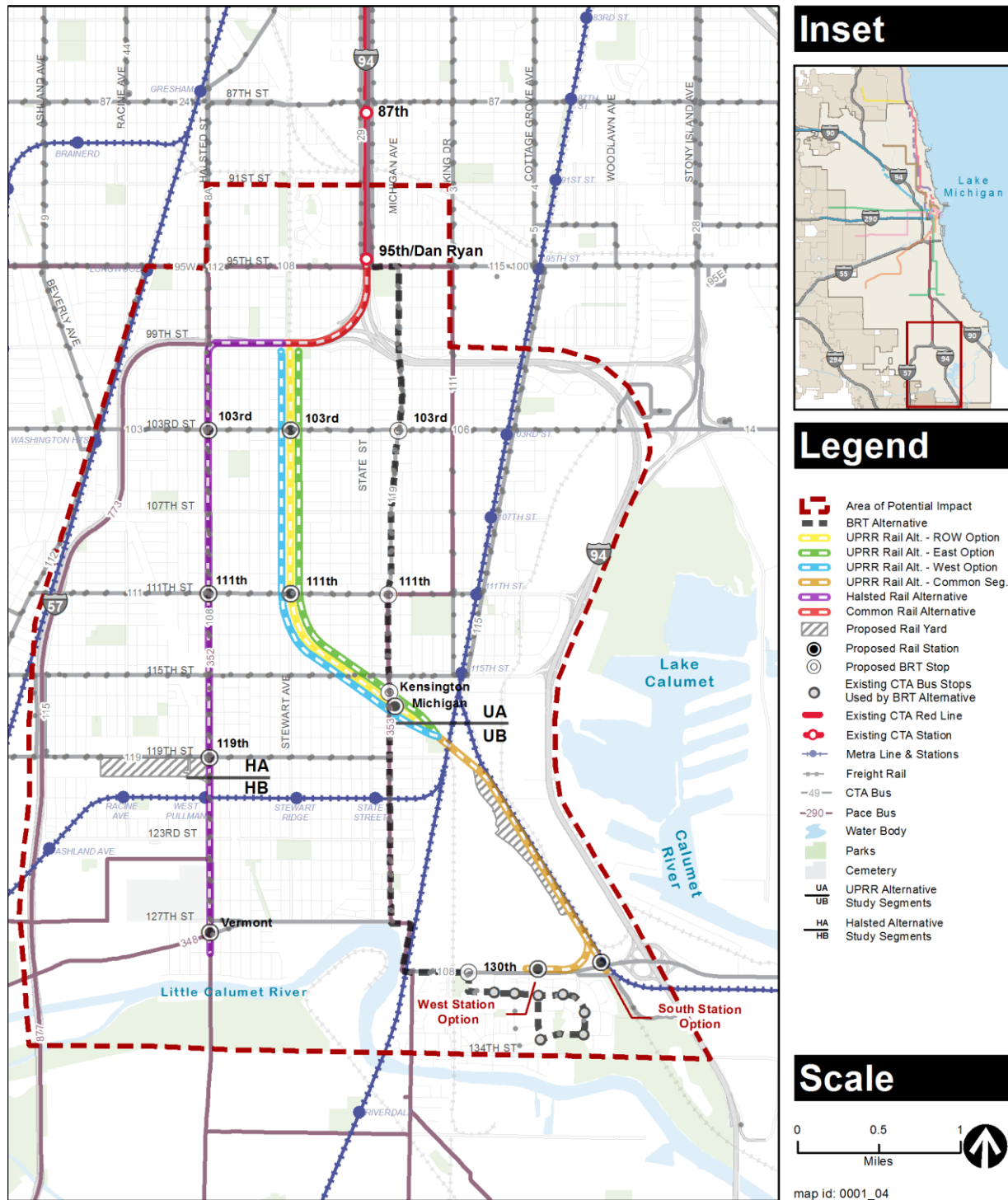


Figure 4-1: Existing Public Transportation Services

4.1.2.1 Bus Rapid Transit Alternative

The existing bus services in the vicinity of the proposed stops of the BRT Alternative are provided below.

103rd Street Stop

Bus routes #34, #103, #106, and #119 currently stop at 103rd Street and Michigan Avenue. The existing stops are at the northeast corner of the intersection for the northbound direction and at the northwest corner of the intersection for the southbound direction. Both locations do not have any existing bus shelters. The ME District station, 103rd/Rosemoor Park & Ride, is a few blocks east of Michigan Avenue.

111th Street Stop

Bus routes #34, #111, and #119 stop at 111th Street. The bus route has an existing stop at the southwest corner of the intersection of 111th Street and Michigan Avenue in the eastbound direction and the northwest corner of the intersection in the westbound direction. There are no existing bus shelters.

Kensington Avenue Stop

Bus routes #34 and #119 stop at Kensington Avenue and Michigan Avenue. The existing stops are at the southeast corner of Kensington Avenue and Michigan Avenue in the northbound direction and on the west side of Michigan Avenue in the southbound direction. There is an existing bus shelter on the west side of Michigan Avenue but none in the northbound direction.

130th Street Stop

CTA Bus route #34 operates from the 95th Street Terminal to 130th Street, looping around the Altgeld Gardens neighborhood. This bus serves Harlan High School, Roseland Hospital, Carver Military Academy, and residents of the Altgeld Gardens neighborhood. There are no bus shelters at the existing bus stop locations.

4.1.2.2 Union Pacific Railroad Rail Alternative

The existing bus services in the vicinity of the proposed station areas for all options of the UPRR Alternative are provided below. Due to the proximity of UPRR Alternative option alignments, the existing bus services would be the same for each option. Since there are no existing bus stops at the at-grade UPRR crossings, there are no bus shelters at the station locations for this alternative.

103rd Street Station

Currently, CTA bus route #103 accommodates passengers from Pulaski Road to the 95th Street Terminal. This bus route operates west of Michigan Avenue and serves Harlan High School, Julian High School, St. Xavier University, Mother McAuley High School and Brother Rice High School. This route also crosses the Metra Rock Island (RI) District line at two stations: 103rd Street - Washington Heights and 103rd Street - Beverly Hills. The RI District line is on the edge of the

API. There are existing bus stops at 103rd Street and Michigan Avenue. The northbound bus stops at the northeast corner of the intersection and the southbound bus stops at the northwest corner of the intersection. CTA route #106 provides service west of Michigan Avenue on 103rd Street from 95th Street Terminal to Stony Island Avenue. This bus route serves Olive Harvey College, Corliss High School, and Harlan High School. CTA route #106 also crosses near the 103rd/Rosemoor ME District station.

111th Street Station

The 111th/King Drive CTA route #111 provides service from 95th Street Terminal to 111th Street. This serves Gwendolyn Brooks High School. The bus route has an existing stop at the southwest corner of the intersection of 111th Street and Michigan Avenue in the eastbound direction and the northwest corner of the intersection in the westbound direction.

Michigan Avenue Station

The CTA route #111 has an existing stop at the southwest corner of the intersection of 115th Street and Michigan Avenue in the eastbound direction and the northeast corner of the intersection in the westbound direction.

CTA route #119 operates from Western Avenue to Michigan Avenue on 119th Street, then Michigan Avenue to 95th Street Terminal. This route serves Roseland Hospital and Harlan High School. The existing bus stops at 119th Street and Michigan Avenue are at the northeast corner for the northbound direction and at the northwest corner for the southbound direction. The route also has a stop near the RI District 119th Street station. Pace bus route #353 provides additional service along Michigan Avenue between 111th and 127th Streets.

130th Street Station

CTA Bus route #34 operates from the 95th Street Terminal to 130th Street, looping around the Altgeld Gardens neighborhood. This bus serves Harlan High School, Roseland Hospital, Carver Military Academy, and residents of the Altgeld Gardens neighborhood. There are no bus shelters at the existing bus stop locations.

4.1.2.3 Halsted Rail Alternative

CTA route #8A runs north/south on Halsted Street from 95th Street Terminal to 127th Street and Vermont Street. Existing bus stops along Halsted Street include 103rd Street, 111th Street, 115th Street, 119th Street and Vermont Avenue.

CTA route #108 runs north/south on Halsted Street from the 95th Street Terminal to 127th Street and then continues east on 127th Street. This route is similar to the #8A route and has bus stops at the same locations as listed above for route #8A.

103rd Street Station

Currently, CTA bus route #103 accommodates passengers from Pulaski Road to the 95th Street Terminal. This bus route operates west of Michigan Avenue and serves Harlan High School, Julian High School, St. Xavier University, Mother McAuley High School, and Brother Rice High School. 103rd Street and Halsted bus stop locations are at the southwest corner of the intersection for the eastbound direction, and the westbound direction bus stop locations are at the northwest corner of the intersection. These bus stop locations do not have bus shelters.

111th Street Station

The 111th/King Drive CTA route #111 provides service from the 95th Street Terminal to 111th Street. This route serves Gwendolyn Brooks High School. The bus route has an existing bus shelter at the southeast corner of the intersection of 111th Street and Halsted Street for the eastbound direction and the northeast corner of the intersection for the westbound direction. These bus stops have shelters.

119th Street Station

CTA route #119 operates from Western Avenue to Michigan Avenue on 119th Street, then Michigan Avenue to the 95th Street Terminal. This route serves Roseland Hospital and Harlan High School. The existing bus stops at 119th Street and Halsted Street are at the northwest corner of the intersection for the westbound direction and at the southwest corner of the intersection for the eastbound direction. The eastbound #119 stop and southbound #8A stop have shelters.

The Pace bus route #352 is a north/south bus route from the 95th Street Terminal to Pace Chicago Heights Transportation Center. The route serves St. James Hospital, Prairie State College, and the Illinois Department of Human Services.

Vermont Avenue Station

Pace bus route #348 is an east/west route that stops at Vermont Street and Halsted Street. These stops do not have shelters.

4.1.3 Commuter Rail Service

Metra provides commuter rail service within the API. The NICTD South Shore line used to provide limited commuter rail service to the Kensington/115th Street station until early 2012 when service was discontinued at this station. Metra commuter rail service in the API includes the ME District Mainline, the ME District Blue Island Branch, and the RI District Mainline. There are a total of eleven commuter rail stations within the API. Figure 4-1 shows the location of the stations along the ME District and RI District lines. Stations within the API are listed below:

ME District Mainline

- 103rd Street (Rosemoor)
- 107th Street

- 111th Street (Pullman)
- Kensington/115th Street

ME District Blue Island Branch

- State Street
- Stewart Ridge
- West Pullman
- Racine Avenue
- Ashland Avenue

RI District Mainline

- 95th Street/Longwood
- 103rd Street/Washington Heights

The Kensington/115th Street station provides connecting service to CTA route #111 and Pace route #353, with park & ride facilities. The Kensington/115th Street station is served by 19 inbound trains between 6:00 AM and 9:00 AM on a typical weekday. The other ME District mainline stations within the API are served by four to five inbound trains during the morning peak period. The five stations in the API on the Blue Island Branch of the ME District are served by six inbound trains in the morning peak period (between 6:00 and 9:00 AM). The two stations in the API on the RI District Mainline are served by three inbound trains in the morning peak period. Approximately two-thirds of the Metra stations have available parking. Table 4-3 presents a summary of the 2006 daily boardings and the 2012 parking statistics at the Metra stations within the API.

Table 4-3: Metra Boardings and Parking by Station

| Line/Station | 2006 Daily Boardings | Parking Available? | Spaces Available (2012) | Parking Utilization Rate (2012) |
|---|----------------------|--------------------|-------------------------|---------------------------------|
| Metra Electric District Mainline | | | | |
| 103rd Street (Rosemoor) | 70 | Y | 38 | 5% |
| 107th Street | 34 | N | - | - |
| 111th Street (Pullman) | 27 | N | - | - |
| Kensington/115th Street | 1,577 | Y | 402 | 90% |
| Metra Electric District Blue Island Branch | | | | |
| State Street | 85 | N | - | - |
| Stewart Ridge | 61 | N | - | - |
| West Pullman | 24 | Y | 27 | 0% |
| Racine Avenue | 53 | Y | 29 | 24% |
| Ashland Avenue | 165 | Y | 90 | 52% |
| Metra Rock Island Mainline | | | | |
| 95th Street/Longwood | 147 | Y | 104 | 51% |
| 103rd Street/ Washington Heights | 249* | Y | 267 | 30% |

Source: Regional Transportation Authority Mapping & Statistics

*2002 Boardings. Boardings for 2006 at 103rd Street/Washington Heights were not available.

4.2 Traffic

There are numerous Interstate, regional, and local roadways that provide multiple parallel north/south and east/west routes for automobile travel within the API, including the following:

East/West

- 95th Street
- 99th Street
- 103rd Street
- 107th Street
- 111th Street
- 115th Street
- 119th Street
- 127th Street
- 130th Street

North/South

- Interstate 57
- Halsted Street
- Wentworth Avenue
- State Street
- Michigan Avenue
- Indiana Avenue
- Martin Luther King Drive
- Cottage Grove Avenue
- Interstate 94 (Dan Ryan Expressway/Bishop Ford Freeway)

Table 3-1 identifies whether an intersection is signalized or unsignalized and indicates what agency has jurisdiction over the intersection. Figure 4-2 shows the signalized and unsignalized intersections within the project area. The existing traffic data can be found in Appendix A, Existing Conditions. Existing intersection lane geometry and traffic volumes (2012) for the intersections are on pages A-1 through A-6. The existing traffic counts are on pages A-7 through A-415. The capacity analysis for each intersection is on pages A-416 through A-571.

Table 4-4 presents a summary of the existing (2012) conditions. Under existing (2012) conditions, most of the study intersections within the API operate at LOS “D” or better in both the AM and PM peak hours. Under existing (2012) conditions, the following intersections operate at LOS “E” or “F” in either or both the AM and PM peak hours:

- 98th Place and Halsted Street - AM LOS = F; PM LOS = F
- 103rd Street and Vincennes Avenue and Beverly Avenue - PM LOS = F
- 103rd Street and Halsted Street - AM LOS = E
- 107th Street and Halsted Street - AM LOS = F
- 115th Street and Martin Luther King Drive - PM LOS = F
- 119th Street and Ashland Avenue - PM LOS = F

For a graphic depiction of existing congestion within the API, refer to Figure 4-3 and Figure 4-4 which show estimated congestion based on volume-to-capacity ratios for 2010 and 2030.

Table 4-4: Existing (2012) Intersection Level of Service

| ID | Intersection | Control Type | AM Peak-Hour LOS | PM Peak-Hour LOS |
|----|--|--------------|------------------|------------------|
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D |
| 3 | 95th Street and State Street | Signalized | C | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F |
| 6 | 99th Street and Halsted Street | Signalized | C | D |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B |
| 9 | 99th Street and State Street | Signalized | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | B | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | B |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | D | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | E | D |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B |

| ID | Intersection | Control Type | AM Peak-Hour LOS | PM Peak-Hour LOS |
|-----|--|--------------|------------------|------------------|
| 19 | 103rd Street and State Street | Signalized | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B |
| 26 | 107th Street and State Street | Signalized | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | C | C |
| 32 | 112th Place and Marshfield Avenue | Signalized | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | D | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | A | A |
| 36 | 111th Street and Wentworth Avenue | Signalized | A | A |
| 37 | 111th Street and State Street | Signalized | A | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | B | C |
| 42a | 111th Street and Langley Avenue | Signalized | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | B |
| 43 | 111th Street and Doty Avenue | Signalized | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | C | B |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | C | B |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C |

| ID | Intersection | Control Type | AM Peak-Hour LOS | PM Peak-Hour LOS |
|-----|--|--------------|------------------|------------------|
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B |
| 51 | 115th Street and State Street | Signalized | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | C |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | C | C |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | D | C |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | C | B |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | B |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B |
| 62 | 119th Street and State Street | Signalized | B | B |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A |
| 64 | 127th Street and Paulina Street | Signalized | C | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | B |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C |
| 68 | 127th Street and Halsted Street | Signalized | C | C |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | C | D |
| 71 | 127th Street and State Street | Signalized | A | B |
| 72 | 127th Street and Michigan Avenue | Signalized | A | B |
| 73 | 130th Street and Indiana Avenue | Signalized | B | C |
| 74 | 130th Street and Ellis Avenue | Signalized | A | A |

Notes:

LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

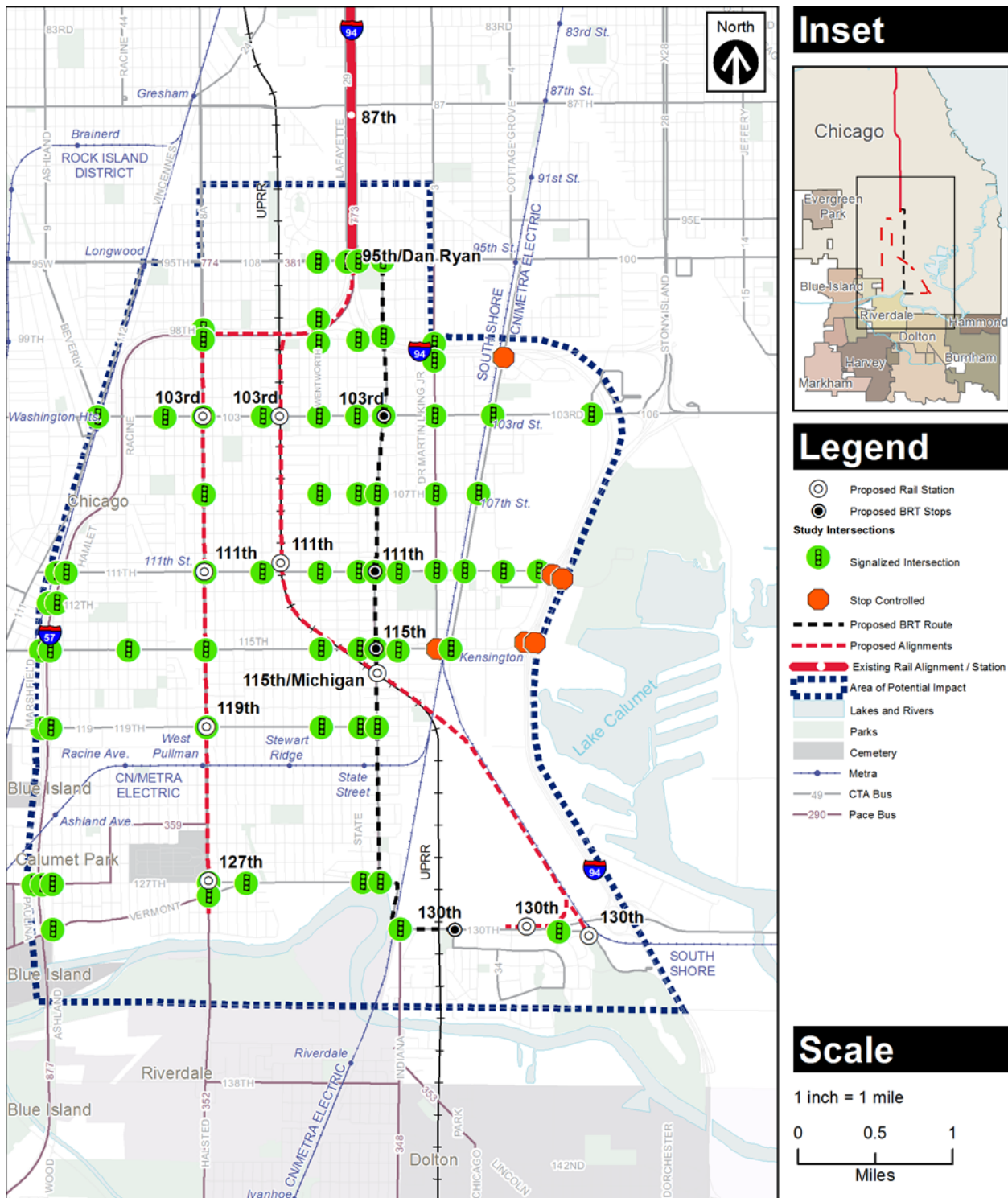


Figure 4-2: Signalized and Unsignalized Intersections within the Area of Potential Impact

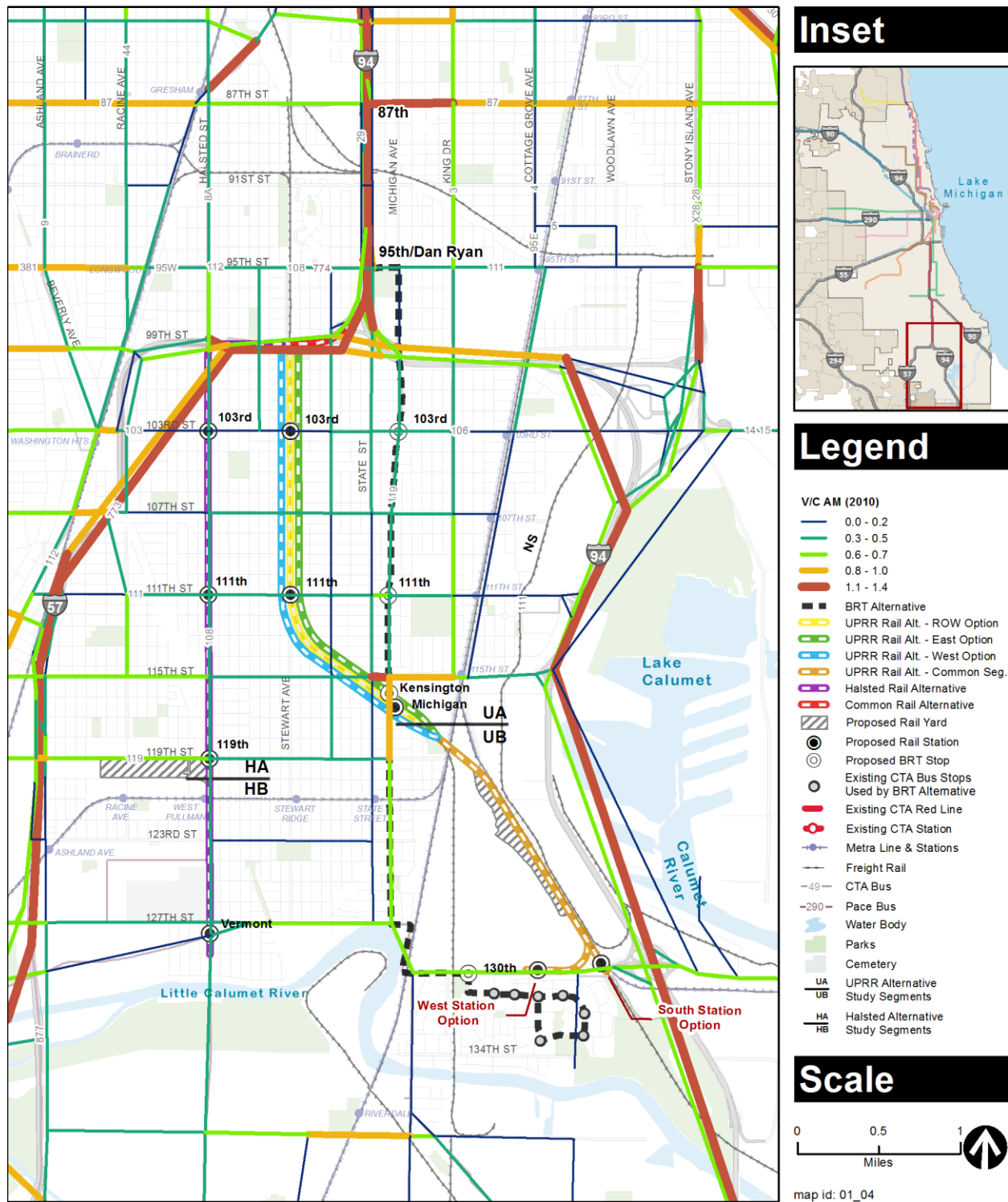


Figure 4-3: Existing (2010) Congestion (Volume/Capacity Ratio) Map

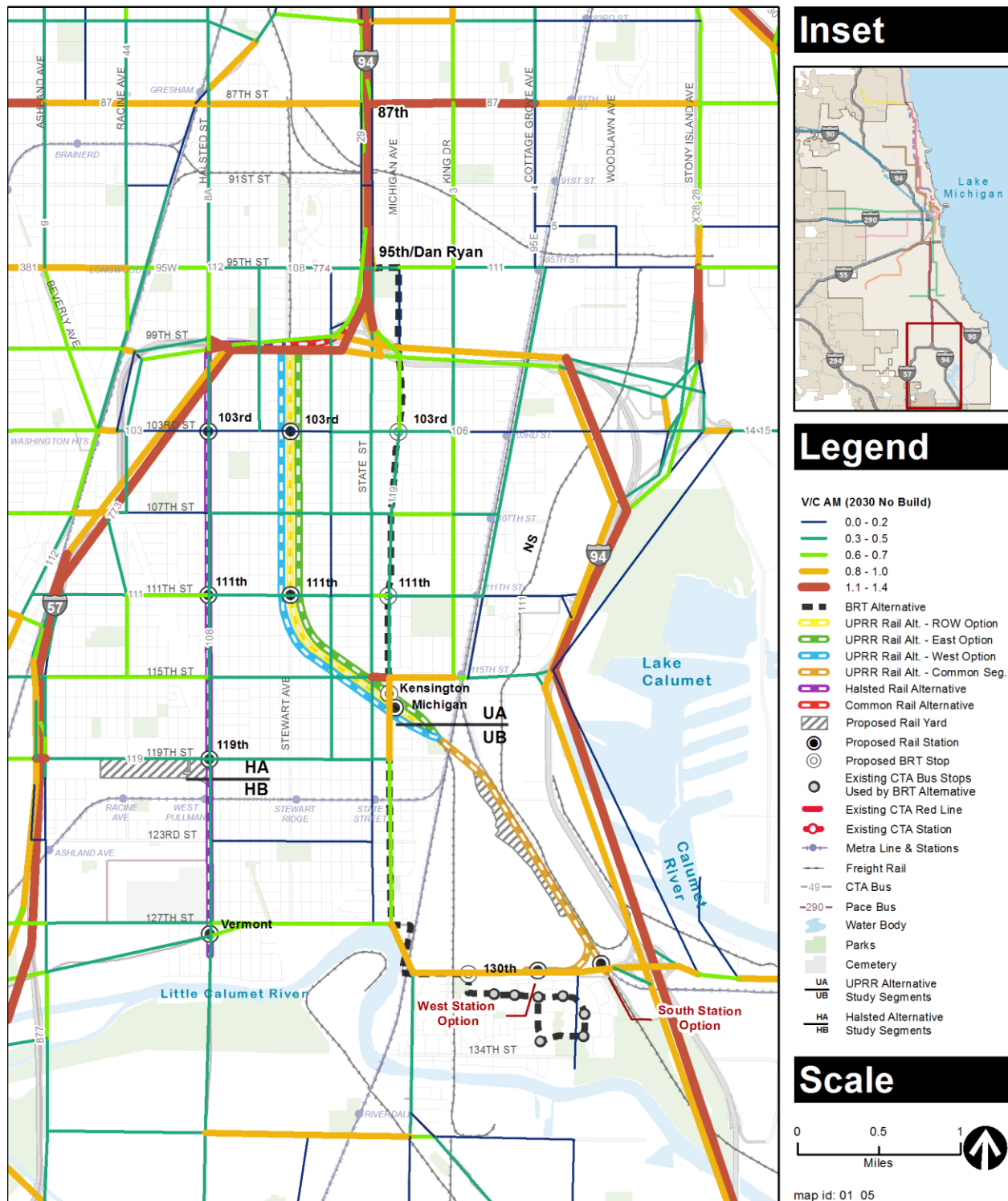


Figure 4-4: 2030 No Build Congestion (Volume/Capacity Ratio) Map

4.3 Freight Transportation

Nearly 500 freight trains per day operate in the Chicago region (Chicago Metropolis 2020). In 2007, regional rail tonnage was estimated at more than 631 million tons, with about 24,000 trailers and containers and about 16,800 carload units moving into, out of, or through the region daily (CMAP 2012). The following active freight train tracks run through the API:

- UPRR Railroad
- CN/Metra Electric Railroad
- NICTD Chicago South Shore & South Bend Railroad (NICTD/CSS & SBRR)
- Norfolk Southern (NS) Railroad
- Indiana Harbor Belt (IHB) Railroad

The UPRR tracks run north/south from the 80th Street junction past the Cal-Sag Channel/Little Calumet River and continue south outside of the API. At the 80th Street junction, near 80th Street and Wallace Avenue, the UPRR tracks converge with RI District, NS, and Belt Railway of Chicago tracks. The UPRR tracks cross over the CN/Metra tracks near 119th Street with a flyover.

The CN freight tracks are west of Cottage Grove Avenue. South of 115th Street, the CN tracks are west of the Metropolitan Water Reclamation District (MWRD) facilities. At 127th Street, the tracks run east of Indiana Avenue and continue south. These tracks carry both passenger and freight trains.

The NICTD/CSS & SBRR tracks run west of Cottage Grove Avenue from Kensington Avenue. This line converges with the CN/Metra tracks between 115th Street and Kensington Avenue. The line continues south between the MWRD facilities and then heads east once the tracks cross under the 130th Street/I-94 Interchange. These tracks carry both passenger and freight trains.

The NS freight tracks are east of the NICTD/CSS & SBRR tracks.

The IHB tracks are west of the NICTD/CSS & SBRR tracks and east of the CN/Metra Tracks.

Figure 4-5 shows the location of the freight railroads within the API.

Table 4-5 lists the existing volumes of passenger and freight trains that pass through the API.

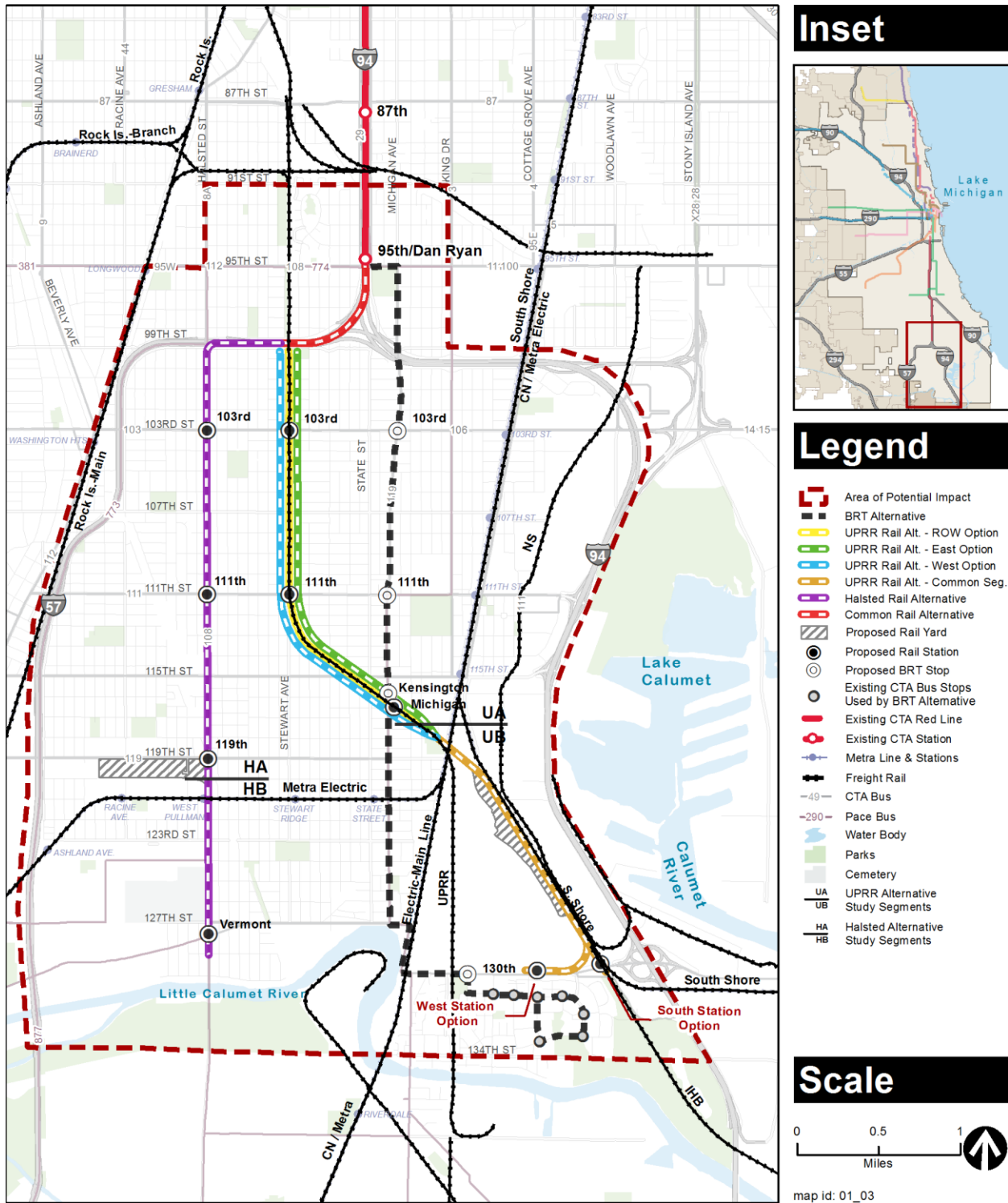


Figure 4-5: Freight Railroads within the Area of Potential Impact

Table 4-5: Existing Train Volumes (2009)

| Location | Peak Day | Passenger | Freight | Total |
|--|----------|-----------|---------|-------|
| BRC/NS/UP, 75th St. Wye to 80th St. Jct. | Friday | 2 | 62 | 64 |
| BRC/UP, 80th St. Jct. to 86th Street | Friday | 2 | 41 | 43 |
| UP, South of 86th Street | Friday | 2 | 24* | 26 |
| NS, 80th St Jct. to State St. | Saturday | 0 | 16 | 16 |
| BRC, 86th St. to State St. | Saturday | 0 | 17 | 17 |
| BRC/NS, East of State St. | Saturday | 0 | 33 | 33 |

Source: CREATE 75th Street CIP Train Model volumes from the Chicago Transportation Coordination Office

Notes: NS = Norfolk Southern; UP = Union Pacific; BRC = Belt Railway Company; Jct. = junction

*On May 15, 2009, UPRR directly reported to CTA that freight volume was 27 trains in the peak day rather than the 24 trains in the peak day used in the CREATE model.

4.4 Bicycle Facilities

The City of Chicago is known as a bicycle-friendly community. Chicago's vision is to make bicycling an integral part of daily life (City of Chicago 2006). Chicago has 117 miles of on-street bike lanes and more than 30 miles of marked lanes on the City streets (City of Chicago 2012c). The *Chicago Streets for Cycling Plan 2020* network consists of 645 miles of on-street bike routes. These routes include Neighborhood Bike Routes, Crosstown Bike Routes and Spoke Routes. The *Chicago Streets for Cycling Plan 2020* will guide the development of a citywide network of innovative bikeways. The existing bike facilities within ½ mile of the alternatives were identified and are shown on Figure 4-6. Bike facilities recommended in the *Chicago Bike 2015 Plan* and pertinent recommended bike routes from the *Chicago Streets for Cycling Plan 2020* are also shown on the figure.

Only one off-street bike trail passes through the project area. Major Taylor Trail is an off-street bike trail that runs through the project area and is intersected by Halsted Street north of the intersection of 119th Street and Halsted Street. There are no other marked bike lanes within the roadway along or crossing the alternative alignments.

The 95th Street Terminal has indoor bicycle parking facilities.

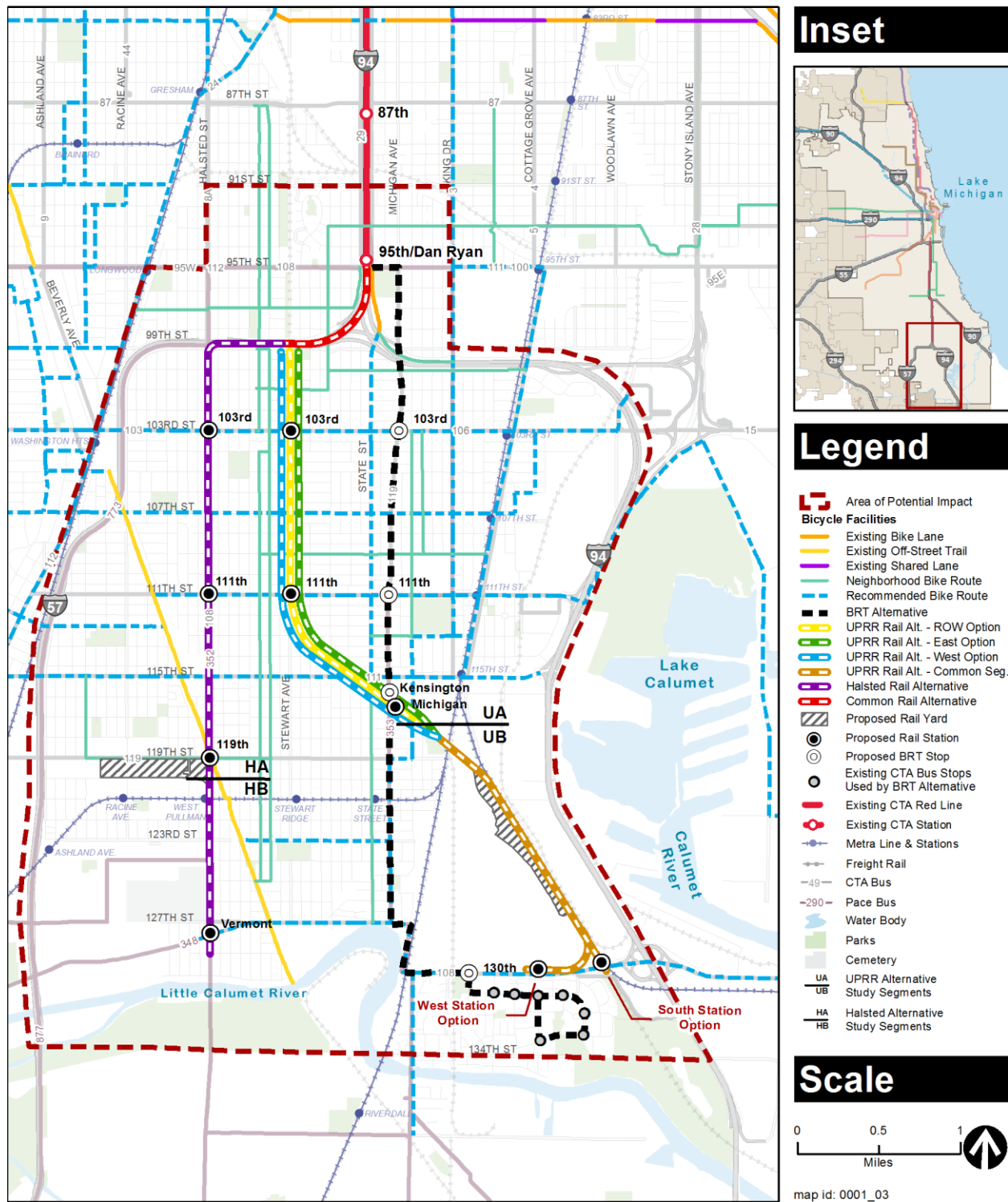


Figure 4-6: Existing and Recommended Bicycle Facilities within the Area of Potential Impact

4.5 Pedestrians

The API for the RLE Project is an urban area with residential and commercial land uses. The sidewalk system within the API is extensive, with sidewalks on both sides of most of the arterial and collector roads. Sidewalks were reviewed qualitatively within the API. The width of sidewalks varies in the API with arterial streets having a standard 6-foot-wide sidewalk. Collector streets have sidewalks that are approximately 12 to 17 feet wide. These widths are average widths; sidewalk widths vary along most streets within the API.

Along the BRT Alternative, sidewalks are present at the 103rd Street, 111th Street, and Kensington Avenue stops.

- At Michigan Avenue and 103rd Street, sidewalks are approximately 8 feet wide along Michigan Avenue and vary from 6 to 8 feet wide along 103rd Street. The sidewalks are directly in back of the curb. Although ramps are present, all ramps are based on older standards which do not comply with current ADA practice. Crossing the street is controlled by pedestrian signals.
- At Michigan Avenue and 111th Street, sidewalks on all four legs vary from approximately 12 to 16 feet in width, all directly in back of the curb. All ramps in the four quadrants appear to be ADA-compliant.² Crossing the street is controlled by pedestrian signals.
- At Michigan Avenue and Kensington Avenue, the sidewalks along Michigan Avenue vary between approximately 10 and 12 feet in width and are directly behind the curb. Along Kensington Avenue, the width varies from approximately 6 to 8 feet and, away from the intersection, are separated from the street by a grassy boulevard. Ramps are not ADA-compliant at this intersection. This intersection is uncontrolled (with a stop sign on Kensington Avenue).
- At the proposed 130th Street stop location, no sidewalks are present along 130th Street. Six-foot wide sidewalks run along both sides of Eberhart Avenue separated from the street by a grassy boulevard. The ramps at Eberhart Avenue are not ADA-compliant. This intersection is uncontrolled (with a stop sign on Eberhart Avenue).

Near the proposed stations for the UPRR Rail Alternative options, sidewalks are present along 103rd Street, 111th Street, and Michigan Avenue.

- Where 103rd Street crosses the existing UPRR tracks, sidewalks run on both sides of 103rd Street and are approximately 6 feet wide. Along Eggleston Avenue, immediately to the west of the tracks and north of 103rd Street, a single sidewalk runs along the west side of

² All assessment of ADA compliance in this section is based on visual inspection only, examining the configuration of the ramp and presence of tactile warning. Field survey and measurement for precise slopes and other compliance features was not conducted.

the road. The ramp at the corner of 103rd Street and Eggleston Avenue (in the northwest quadrant) is ADA-compliant.

- At 111th Street, sidewalks are on both sides of the road and are approximately 6 feet wide. While ramps are present at the nearby intersections, the ramps do not meet all current ADA standards.
- At Michigan Avenue, sidewalks are on both sides of the road and are approximately 12 feet wide. Ramps are present at the nearby corners, but the ramps do not meet current ADA standards.
- There are no sidewalks along 130th Street at the locations of the 130th Street South and West Station Options.

For the Halsted Rail Alternative, sidewalks are present along 103rd, 111th, and 119th Streets near their intersections with Halsted Street. Sidewalks are present along both sides of Halsted Street except on the west side between 124th and 127th Streets.

- In the vicinity of 103rd Street, sidewalks along Halsted Street are generally 14 to 16 feet wide. Sidewalks along 103rd Street are approximately 9 to 11 feet wide. ADA-compliant ramps are present on all but the northeast corner of the 103rd Street and Halsted Street intersection.
- At 111th Street, sidewalks along Halsted Street are 13 to 17 feet wide. Sidewalks on 111th Street are approximately 11 to 13 feet wide. Only the ramps on the east side of Halsted Street are ADA-compliant.
- At 119th Street, sidewalks along Halsted Street are approximately 16 feet wide at the intersection, but narrow to 6 feet wide north of the intersection. Sidewalks along 119th Street vary from 12 to 19 feet wide. The sidewalk on the south side of 119th Street ends at the alley west of Halsted Street. Only the ramps on the west side of Halsted Street are ADA-compliant.
- Vermont Avenue has sidewalks (6 to 10 feet wide) at the immediate vicinity of its intersection with Halsted Street but the sidewalk does not continue after the alley on the northeast leg of the intersection. Sidewalks on Halsted Street vary from 13 to 17 feet wide. No ramps at this intersection meet the newest ADA standards.

In order to remain compliant with current ADA codes, the City of Chicago is continually updating intersection curb ramps to make the city accessible to everyone. There are curb ramps to allow for wheelchair accessibility at most of the intersections within the API. Most of these curb ramps are not compliant with current ADA standards, which require detectable warning tiles for the visually impaired.

The Chicago Department of Transportation is implementing its *Chicago Pedestrian Plan*. Some of the goals of the plan are to increase pedestrian safety, identify and eliminate gaps and barriers in the pedestrian network, increase the amount and quality of pedestrian space, and increase the number of pedestrian trips for enjoyment, school, work, and daily errands.

4.6 Parking

The existing parking facilities were identified by field observation, aerial imagery, or through published information regarding parking facilities from the City of Chicago. Most of the streets in the API have on-street parking. Table 4-6 is a summary of the on-street parking along some of the major roadways along the alternative alignments. On-street parking is allowed (as posted) on most of the local streets not listed in this table. There is currently no park & ride facility at the existing 95th Street Terminal.

Table 4-6: Existing On-Street Parking

| Street | Roadway Functional Class | On-Street Parking |
|------------------|--------------------------|-------------------|
| 95th Street | other principal arterial | No |
| 99th Street | local road or street | Yes |
| 103rd Street | minor arterial | Yes |
| 107th Street | major collector | No |
| 111th Street | minor arterial | Yes |
| 115th Street | major collector | Yes |
| Halsted Street | minor arterial | Yes |
| Wentworth Avenue | major collector | Yes |
| State Street | minor arterial | Yes |
| Michigan Avenue | major collector | Yes |
| Indiana Avenue | minor arterial | No |
| 130th Street | other principal arterial | No |

A permit or fee is not required to park on the streets within the API. There are no existing off-street surface parking lots or parking garages that are used for public parking within the API. Many of the commercial and retail buildings within the API have plenty of parking available either through on-street or parking lots associated with the buildings.

Section 5

Impacts and Mitigations

This section describes the transportation impacts for each of the four alternatives under consideration for the RLE Project. The impacts are discussed in three categories for each alternative: permanent impacts, construction impacts, and cumulative impacts. Permanent impacts occur after the project is fully constructed and operational. Construction impacts refer to impacts that occur during the construction phase of the project and are temporary in nature. Cumulative impacts result from the incremental impact of the alternative combined with other past, present and reasonably foreseeable future actions. Where applicable, potential mitigation measures are also presented.

5.1 No Build Alternative

5.1.1 Permanent Impacts and Mitigations - No Build Alternative

5.1.1.1 Public Transportation

The No Build Alternative would not have any impacts on existing bus or rail transit conditions within the API. The existing services would continue to operate under the same conditions as they do today.

5.1.1.2 Traffic

Under No Build (2026) conditions, 88 percent of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-1. Appendix B contains the No Build traffic data used in the traffic impact analysis. Under No Build (2026) conditions, there would be nine intersections that would operate at LOS “E” or “F” in either or both the AM and PM peak hours. The nine intersections that would operate at LOS “E” or “F” are shown in bold in Table 5-1.

Under No Build (2030) conditions, 87 percent of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-1. See Appendix B for the No Build traffic data. Under No Build (2030) conditions, there would be ten intersections that would operate at LOS “E” or “F” in either or both the AM and PM peak hours. The ten intersections are shown in bold in Table 5-1.

Table 5-1: No Build (2026 and 2030) Intersection Level of Service

| ID | Intersection | Control Type | 2026 No Build Alternative | | 2030 No Build Alternative | |
|----|--|--------------|---------------------------|------------------|---------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | D | D | D |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | B | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | D | F | D |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | B |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | A | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |

| ID | Intersection | Control Type | 2026 No Build Alternative | | 2030 No Build Alternative | |
|-----|--|--------------|---------------------------|------------------|---------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | B | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | A | B | A |
| 36 | 111th Street and Wentworth Avenue | Signalized | A | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | A | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | D |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | C | C |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | D | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | B | E | B |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | D | B | D |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | B |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | D | C | D | C |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | E | C | E | C |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |

| ID | Intersection | Control Type | 2026 No Build Alternative | | 2030 No Build Alternative | |
|----|--|--------------|---------------------------|------------------|---------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | B | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C | C | C |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | B | B | B | B |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A | A | A |
| 64 | 127th Street and Paulina Street | Signalized | C | C | C | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C | C | C |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | C | C | C | C |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | C | D | D | D |
| 71 | 127th Street and State Street | Signalized | B | B | B | B |
| 72 | 127th Street and Michigan Avenue | Signalized | A | B | A | B |
| 73 | 130th Street and Indiana Avenue | Signalized | C | C | C | C |
| 74 | 130th Street and Ellis Avenue | Signalized | A | A | A | A |

Notes:

LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

5.1.1.3 Freight Transportation

Rail tonnage moving to, from, and through the Chicago region is expected to increase by more than 60 percent by 2040 (CMAP 2010b). Tonnage carried by truck in the Chicago region may grow by more than 70 percent (CMAP 2010b). Table 5-2 shows the forecasted freight rail volumes for 2029 developed by the Chicago Transportation Coordination Office.³ These forecasts are not available beyond the year 2029. The No Build Alternative would not have any impacts on the freight transportation within the API.

³ The Chicago Transportation Coordination Office was established in 1999 to develop managerial solutions wherever possible to railroad operating problems in Chicago, to work with public agencies on the public impacts of rail service, and to assist in continuing the capital planning process. The coordination efforts by the Chicago Transportation Coordination Office were a forerunner to the coordination established in the CREATE program in 2003. Still playing a

Table 5-2: Forecasted Train Volumes (2029 No Build)

| Location | Peak Day | Passenger | Freight | Total |
|--|----------|-----------|---------|-------|
| BRC/NS/UP, 75th St. Wye to 80th St. Jct. | Thursday | 4 | 77 | 81 |
| BRC/UP, 80th St. Jct. to 86th Street | Friday | 4 | 51 | 55 |
| UP, South of 86th Street | Friday | 4 | 23 | 27 |
| NS, 80th St Jct. to State St. | Saturday | 0 | 22 | 22 |
| BRC, 86th St. to State St. | Saturday | 0 | 28 | 28 |
| BRC/NS, East of State St. | Saturday | 0 | 50 | 50 |

Source: CREATE 75th Street CIP Train Model volumes from the Chicago Transportation Coordination Office

Notes: NS = Norfolk Southern; UP = Union Pacific; BRC = Belt Railway Company

5.1.1.4 Bicycle Facilities

The No Build Alternative would not have any impacts on existing bike routes or recommended bike routes within the API. Recommended bicycle routes from the *Streets for Cycling Plan 2020* are shown on Figure 4-6.

5.1.1.5 Pedestrians

The No Build Alternative would not upgrade any intersections that currently do not meet the ADA accessibility code except as upgraded as part of the Chicago ADA Sidewalk Ramp Program. The conditions under the No Build Alternative would be the same as the existing conditions.

5.1.1.6 Parking

Under the No Build Alternative parking facilities are expected to remain the same as under existing conditions.

5.1.2 Construction Impacts and Mitigations - No Build Alternative

The only construction activities associated with this alternative would be the already funded and committed roadway and public transportation projects in the API, plus typical repairs required to keep roadways, intersections, and transit service operational.

5.1.3 Cumulative Impacts and Mitigations - No Build Alternative

There would be no cumulative impacts associated with the No Build Alternative. However, the No-Build Alternative would not realize the economic benefits from transportation improvements as the other build alternatives.

vital role today, the Chicago Transportation Coordination Office focuses on process improvements and enhanced communication to help trains flow better through the region (while CREATE focuses on capital projects).

5.2 Bus Rapid Transit Alternative

5.2.1 Permanent Impacts and Mitigations - Bus Rapid Transit Alternative

5.2.1.1 Public Transportation

The BRT Alternative would provide an enhanced bus route with transit signal priority along the existing #34 South Michigan bus route. Figure 5-1 shows the proposed alignment of the BRT Alternative. The anticipated overall runtime from 130th Street to the 95th Street Terminal and the wait time at 130th Street would decrease. The headway for the route #34 would be changed to 12 minutes due to the addition of the enhanced bus route. The BRT Alternative would have 4-minute headways from 6:00 AM to 8:00 PM and 15-minute headways at all other times of service. The BRT Alternative would add 250 bus runs along the BRT Alternative alignment relative to existing conditions. Table 5-3 summarizes the additional bus service for the BRT Alternative. No other changes to existing bus routes would be made with the BRT Alternative.

Table 5-3: Bus Services for the Bus Rapid Transit Alternative

| | Headway (minutes) | | Bus Runs | | |
|---------|-------------------|-------------|-----------|-------------|-------|
| | 6 AM-8 PM | Rest of Day | 6 AM-8 PM | Rest of Day | Total |
| Weekday | 4 | 15 | 210 | 40 | 250 |
| Weekend | 15 | 15 | 56 | 40 | 96 |

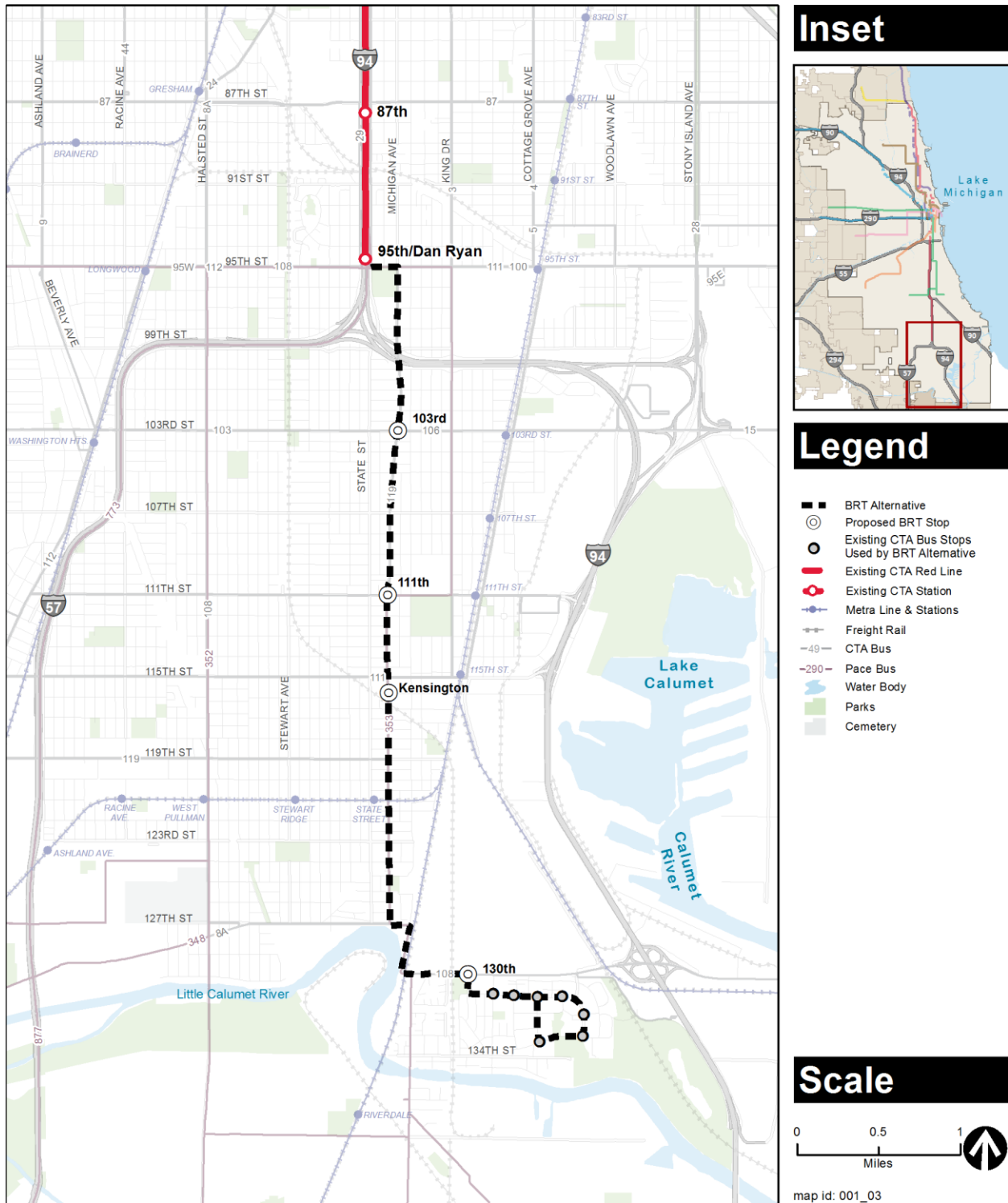


Figure 5-1: Bus Rapid Transit Alternative

The BRT Alternative would have positive impacts on public transportation service. The transportation model indicates 374 new daily riders for the BRT Alternative and total project weekday boardings of 3,190 (AECOM 2009). The additional services would reduce travel times for passengers compared to existing conditions. (Average existing travel time for existing #34 between 7 AM and 9 AM from 131st Street/Eberhart is 28 minutes. Expected travel time for the BRT Alternative from 130th Street to the 95th Street Terminal is 23 minutes. Average wait time for the existing #34 between 7 AM and 9 AM is 5 minutes, or half the average headway of 10 minutes. The expected average wait time for the BRT Alternative is two minutes, or half the average headway of four minutes during the entire 6 AM to 8 PM time period.) The transportation model indicates an average “user benefit” of 9 minutes per boarding for the BRT Alternative (AECOM 2009). In addition to benefits for passengers making use of the BRT Alternative, passengers using the local #34 would likely experience benefits. With fewer boardings on the local #34, dwell time would be decreased, marginally improving end-to-end run times. Also, with a shift in passengers to the BRT Alternative, peak-hour local buses would be less crowded. (In peak hours, the existing #34 buses run at or near capacity.)

5.2.1.2 Traffic

Under BRT Alternative (2026) conditions, most of the study intersections within the API would operate at an acceptable LOS (LOS “D” or better) in both the AM and PM peak hours, as shown in Table 5-4. The traffic data and Synchro results are in Appendix C for the BRT Alternative. All changes in traffic volumes are related to access to parking at BRT stations. Under BRT Alternative (2026) conditions, there would be 15 intersections that would operate at an unacceptable LOS (LOS “E” or “F”) in either or both the AM and PM peak hours. Of those 15 intersections, 7 would operate at conditions worse than the No Build conditions. The intersections that would operate at worse than the No Build conditions are shown in bold in Table 5-4 and are listed below:

- 115th Street and Michigan Avenue (ID #52) - **AM LOS = E; PM LOS = F**
- 115th Street and Cottage Grove Avenue (ID #55a) - **AM LOS = E; PM LOS = F**
- 115th Street and Cottage Grove Avenue East (ID # 55b) - **AM LOS = F**
- 119th Street and State Street (ID #62) - **PM LOS = E**
- 127th Street and Halsted Street (ID #68) - **PM LOS = E**
- 127th Street and Vermont Avenue and Wallace Street (ID #70) - **AM LOS = F; PM LOS = F**
- 130th Street and Indiana Avenue (ID #73)– **AM LOS = E; PM LOS = F**

Under BRT Alternative (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-4. Under BRT Alternative (2030) conditions, there would be 17 intersections that would operate at LOS “E” or “F” in either or both the AM and PM peak hours. Of the 17 intersections, 10 would operate at

worse than the No Build conditions. The 10 intersections that would operate at worse than the No Build conditions are the following, and are shown in bold text in Table 5-4:

- 103rd Street and Halsted Street (ID #16) - AM LOS = F; **PM LOS = E**
- 111th Street and Cottage Grove Avenue (ID #41) - **PM LOS = E**
- 115th Street and Michigan Avenue (ID #52) - AM LOS = E; PM LOS = F
- 115th Street and Martin Luther King Drive (ID #54) - AM LOS = E; PM LOS = F
- 115th Street and Cottage Grove Avenue (ID #55a) - AM LOS = E; PM LOS = F
- 115th Street and Cottage Grove Avenue East (ID #55b) - AM LOS = F
- 119th Street and State Street (ID #62) - **PM LOS = E**
- 127th Street and Halsted Street (ID #68) - **PM LOS = E**
- 127th Street and Vermont Avenue and Wallace Street (ID #70) - AM LOS = F; PM LOS = F
- 130th Street and Indiana Avenue (ID # 73) - AM LOS = E; PM LOS = F

Table 5-4: Bus Rapid Transit Alternative (2026 and 2030) Intersection Level of Service

| ID | Intersection | Control Type | 2026 BRT Alternative | | 2030 BRT Alternative | |
|----|---|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | AM Peak- Hour LOS | PM Peak- Hour LOS | AM Peak- Hour LOS | PM Peak- Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | C | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |

| ID | Intersection | Control Type | 2026 BRT Alternative | | 2030 BRT Alternative | |
|-----|--|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | AM Peak- Hour LOS | PM Peak- Hour LOS | AM Peak- Hour LOS | PM Peak- Hour LOS |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | D | F | E |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | B |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | B | A | B |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | B | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | B | B | B | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | E |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | D | D |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | D | C | E | C |

| ID | Intersection | Control Type | 2026 BRT Alternative | | 2030 BRT Alternative | |
|-----|--|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | AM Peak- Hour LOS | PM Peak- Hour LOS | AM Peak- Hour LOS | PM Peak- Hour LOS |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | C | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | D | B | D |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | E | F | E | F |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | C |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | E | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | E | F | E | F |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | F | D | F | D |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C | C | C |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | C | E | C | E |
| 63 | 119th Street and Michigan Avenue | Signalized | B | B | B | B |
| 64 | 127th Street and Paulina Street | Signalized | C | C | C | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C | C | C |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | D | E | D | E |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | F | F | F | F |
| 71 | 127th Street and State Street | Signalized | B | D | B | D |

| ID | Intersection | Control Type | 2026 BRT Alternative | | 2030 BRT Alternative | |
|----|----------------------------------|--------------|----------------------|------------------|----------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 72 | 127th Street and Michigan Avenue | Signalized | A | C | A | C |
| 73 | 130th Street and Indiana Avenue | Signalized | E | F | E | F |
| 74 | 130th Street and Ellis Avenue | Signalized | A | B | A | B |

Notes:

BRT = Bus Rapid Transit.

Signalized intersection level of service (LOS) reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. Intersections with LOS "E" or "F" that would be worse than the No Build conditions shown in bold.

Mitigation measures to reduce or minimize the impacts were evaluated using Synchro for the transportation network surrounding the BRT Alternative alignment. Mitigation measures for intersections near the affected intersection may also be necessary to provide better flow of traffic; therefore, the mitigation measures include the affected intersections as well as adjacent or nearby intersections. Table 5-5 lists the mitigation measures that would address impacts on the study intersections under BRT Alternative (2030) conditions. At intersections where adverse impacts are expected, potential mitigation measures have been identified to offset the portion of the LOS deterioration attributable to the BRT Alternative.

Table 5-5: Mitigation Measures for the Bus Rapid Transit Alternative (2030) Conditions

| ID | Intersection | Mitigation Measure |
|-----|--|--|
| 41 | 111th Street and Cottage Grove Avenue | PM: Optimize cycle length/splits. |
| 42 | 111th Street and Ellis Avenue | AM/PM: Optimize cycle length/splits. |
| 52 | 115th Street and Michigan Avenue | AM/PM: Optimize cycle length/splits. |
| 54 | 115th Street and Martin Luther King Drive | Remove on-street parking lane for additional through eastbound/westbound lane on 115th Street. |
| 55a | 115th Street and Cottage Grove Avenue | AM/PM: Optimize cycle length/splits. |
| 55b | 115th Street and Cottage Grove Avenue East | AM/PM: Optimize cycle length/splits. |
| 62 | 119th Street and State Street | PM: Optimize cycle length/splits. |
| 65 | 127th Street and Marshfield Avenue | AM: Optimize cycle length/splits. |
| 68 | 127th Street and Halsted Street | AM/PM: Optimize cycle length/splits. |

| ID | Intersection | Mitigation Measure |
|----|--|---|
| 70 | 127th Street and Vermont Avenue and Wallace Street | Change westbound through/left to dedicated westbound left turn lane. Restrict northeast bound to northbound movement. Actuate signal. Optimize cycle length/splits. |
| 71 | 127th Street and State Street | PM: Optimize cycle length/splits. |
| 73 | 130th Street and Indiana Avenue | AM/PM: Add northbound right turn lane. Optimize cycle length/splits. |

Under BRT Alternative mitigated (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-6. Under BRT Alternative (2030) mitigated conditions, some intersections would operate at LOS “E” or “F;” however, these intersections would be no worse than No Build (2030) conditions. Mitigated conditions would not result in additional intersections with unacceptable LOS. As such, there would be no adverse permanent traffic impacts for this alternative. LOS D is considered to be acceptable for urban areas.

Table 5-6: Bus Rapid Transit Alternative Mitigated (2030) Intersection Level of Service

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 BRT Alternative Mitigated | |
|----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | D | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | D | F | D |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 BRT Alternative Mitigated | |
|-----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | B |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | A | A | B |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | A | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | B | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | C |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | D |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | C | C |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | E | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | B | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 BRT Alternative Mitigated | |
|-----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | D |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | D | C | D |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | C |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | D | C | C | D |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | E | C | C | B |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C | C | C |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | B | B | C | B |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A | B | B |
| 64 | 127th Street and Paulina Street | Signalized | C | C | B | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C | C | D |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | C | C | C | C |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | D | D | C | C |
| 71 | 127th Street and State Street | Signalized | B | B | C | C |
| 72 | 127th Street and Michigan Avenue | Signalized | A | B | B | C |
| 73 | 130th Street and Indiana Avenue | Signalized | C | C | D | C |
| 74 | 130th Street and Ellis Avenue | Signalized | A | A | A | B |

Notes:

BRT = Bus Rapid Transit

Signalized intersection level of service (LOS) reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

The BRT Alternative includes Transit Signal Priority (TSP). TSP is an operational strategy that is applied to reduce the delay transit vehicles experience at traffic signals. TSP involves communication between buses and traffic signals so that a signal can alter its timing to give priority to transit operations. Priority may be accomplished through a number of methods, such as extending the duration of the green signal for the bus or providing an earlier red signal for side-street traffic. TSP is different from signal preemption, which interrupts the normal signal cycle to accommodate special events (e.g., a train approaching a railroad grade crossing adjacent to a signal or an emergency vehicle responding to a call). With preemption, certain signal phases may be skipped for the intersecting streets.

With TSP, however, the transit detection system communicates a priority request to the traffic signal that may or may not be granted. The TSP communication can fall in four categories:

1. If the bus will pass through a green signal with no alteration of the timing, then no change is made to the timing.
2. If the bus will be stopped at a red signal regardless of an alteration of the timing, then no change is made to the timing.
3. If the transit detection system calculates that keeping the signal green for a few more seconds (as determined by the priority algorithm) will allow the bus to clear the intersection, then the duration of the green signal is extended by a few seconds. “Green time” is reallocated for the benefit of the transit vehicle for this particular signal cycle.
4. If the transit detection system calculates that the bus will just catch the tail end of a red signal, the side street may be given a shorter green signal so that the BRT vehicle may be given an early green signal. Again, “green time” is reallocated for the benefit of the transit vehicle. Note that minimum side-street green times and minimum pedestrian crossing times are always checked in the priority algorithm.

In categories 3 and 4 when a request is granted, the traffic signal timing is altered to serve the priority request without disrupting coordination. In this situation, the normal signal operations process and overall signal cycle are maintained. With TSP, side-street phases would not be skipped, although the timing of the side-street phases will be altered in order to benefit the transit vehicle.

Because of the reallocation of green time, there is potential for additional delays to cross-street traffic. This potential is limited, based on the TSP algorithm to be developed in the design phase. Reallocation of green time typically occurs in less than ten percent of signal cycles because of the algorithm, constraints related to minimum green times, and granting of the TSP request only when the BRT vehicle is behind schedule. For another comparable study (Columbia Pike in Arlington, Virginia), there was only a one percent increase in overall delay with the use of TSP. Because the potential for change in delay (and level of service associated with delay) is small, and because the TSP algorithm is typically developed in the design phase (with refinement during operation), TSP impacts were not included in the traffic analysis for intersections within API.

5.2.1.3 Freight Transportation

There is an existing grade separation between the UPRR and the BRT Alternative on Michigan Avenue. The increase in bus service would therefore not affect the freight rail operations on the UPRR. The CN is separated from vehicular traffic with a grade separation structure at 130th and Indiana Avenue. The CN freight operations would not be affected.

The BRT Alternative would not affect freight transportation. Michigan Avenue is not a designated truck route; therefore, impacts on freight truck traffic would be minimal.

5.2.1.4 Bicycle Facilities

The City of Chicago has recommended a bike route along Michigan Avenue from 119th Street to 127th Street; however, the *Chicago Streets for Cycling Plan 2020* does not indicate a bike route along Michigan Avenue at this location. The *Streets for Cycling Plan 2020* has a recommended neighborhood bike route on State Street, west of Michigan Avenue at this location. Because the *Chicago Streets for Cycling Plan 2020* was adopted by the City of Chicago, it is assumed that the preferred route would be along State Street. There would be no impacts on bicycle facilities from the BRT Alternative.

5.2.1.5 Pedestrians

Pedestrian crossings are uncontrolled at the intersection of Kensington Street and Michigan Avenue. The proposed park & ride facility would have 1,000 spaces at this location. Due to the large number of potential riders, there would be a large number of passengers crossing Michigan Avenue at an unprotected location. There are existing crosswalks that could be improved to mitigate the potential impacts. Mitigation measures could include a public awareness campaign of pedestrian crosswalks, pedestrian refuge islands with signage, or signalization of the intersection.

Implementing the BRT Alternative would result in beneficial impacts by upgrading intersections with ADA-compliant curb ramps and replacing deteriorated sidewalks at bus stop locations with improved bus shelters. Improved bus shelters would be added to provide pedestrians protection from weather conditions. Proposed parking lots would have convenient and safe access to stop locations. Pedestrian access would benefit at the Eberhart Avenue stop with a new traffic signal, marked crosswalks, and ADA-compliant curb ramps. These improvements would provide access for all users and increase pedestrian safety.

5.2.1.6 Parking

Four park & ride locations are proposed with this alternative. The park & ride facilities would expand the reach of the BRT Alternative ridership, while providing enough parking capacity to prevent spillover parking into the surrounding neighborhoods. Table 5-7 lists the parking facility locations and capacity.

Table 5-7: Bus Rapid Transit Alternative Park & Ride Facilities

| Location | Description | Parking Spaces Horizon Year (2030) |
|-------------------|----------------------------|---------------------------------------|
| 103rd Street | Surface Parking Lot | 200 |
| 111th Street | Surface Parking Lot | 200 |
| Kensington Avenue | Three-Story Parking Garage | 1,000 |
| 130th Street | Three-Story Parking Garage | 1,400 |
| Total | | 2,800 |

103rd Street

The BRT Alternative would stop in the same location that the existing CTA route #34 stops. Because there is already a no parking zone in the area of the bus lane, there would be no impact on any on-street parking at this stop. No off-street parking would be affected.

111th Street

The BRT Alternative would stop in the same location that the existing CTA route #34 stops in the farside configuration in the northbound direction and in the nearside configuration in the southbound direction. Because there is already a no parking zone in the area of the bus lane there would be no impact on any on-street parking at this stop. There is a proposed nearside configuration in the northbound direction, which is not currently a location of an existing bus stop. This configuration would eliminate approximately two to three on-street parking spaces. No off-street parking would be affected.

Kensington Avenue

The BRT Alternative would stop in the same location that the existing CTA route #34 stops. Because there is already a no parking zone in the area of the bus lane there would be no impact on any on-street parking at this stop. No off-street parking would be affected.

130th Street

There would be no impact on any on-street or off-street parking at this location.

5.2.2 Construction Impacts and Mitigations - Bus Rapid Transit Alternative**5.2.2.1 Public Transportation**

The BRT Alternative would include construction of improved bus shelters at four locations, four park & ride parking lots or parking structures, and one proposed traffic signal. Existing traffic signals would be reprioritized. The construction activities associated with this alternative would temporarily affect the physical capacity of roadways and intersections, although construction zones at BRT stops typically occupy only one lane and are less than 200 feet in length. This may lead to increased travel times, a possible shift in traffic volumes, and the need to temporarily reroute bus transit service and move stop locations. Bus stops for routes along Michigan Avenue

(#34, #103, #106, and #119) will have changes in stops as construction progresses along the corridor. Bus stops for routes intersecting Michigan Avenue (#111 and #115) will require changes only when construction activities are in the vicinity of the applicable intersection. With adherence to local, state, and federal construction and temporary traffic management programs, as well as public transportation management guidelines, no lasting adverse impacts from the BRT Alternative would result.

5.2.2.2 Traffic

The construction activities associated with this alternative would temporarily affect the physical capacity of local roadways and intersections. Construction of BRT stops typically create only minor construction impacts since the work zones at BRT stops occupy only one lane and are less than 200 feet in length. This may lead to increased travel times and possible shift in traffic volumes and traffic patterns during construction. Detours to other nearby streets are not anticipated for BRT stop construction.

Adherence to local, state, and federal construction and temporary traffic management guidelines would result in no lasting adverse traffic impacts from the BRT Alternative.

5.2.2.3 Freight Transportation

Construction of the proposed parking lot northeast of the UPRR tracks may require some temporary scheduled track closures. Construction activities would be phased to ensure that impacts on freight trains are minimized.

5.2.2.4 Bicycle Facilities

Temporary construction impacts for bicycle facilities associated with the BRT Alternative may occur in locations where new bus shelters and surface parking lots are proposed. Some construction activities may reduce the capacity of the roadway due to maintenance of traffic during construction activities. This may lead to increased travel times for bicyclists. There are no existing or recommended routes along Michigan Avenue, which is the proposed alignment of the BRT Alternative.

5.2.2.5 Pedestrians

Temporary construction impacts for pedestrians associated with the BRT Alternative would occur in locations of the four upgraded bus shelters and park & ride lots or structures. Some construction activities may result in a temporary sidewalk closure on one side of the street.

5.2.2.6 Parking

On-street parking along the roadways would be temporarily affected for construction of park & ride lots or structures and bus shelters due to maintenance of traffic during construction activities.

5.2.3 Cumulative Impacts and Mitigations - Bus Rapid Transit Alternative

There would be no cumulative impacts due to the BRT Alternative.

5.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

The Union Pacific Railroad (UPRR) Rail Alternative Right-of-Way (ROW) Option would include construction of an elevated structure heading south from 95th Street along I-57 until reaching the UPRR corridor in the vicinity of Eggleston Avenue. The alignment would then turn south along the UPRR corridor to approximately 111th Street, where it would turn southeast. East of Prairie Avenue, the alignment would cross over the CN/ME tracks near 119th Street, where it would transition to an at-grade profile and then continue southeast along the NICTD/CSS & SBRR ROW using a portion of the IHB alignment to terminate at 130th Street. Four stations would be included at 103rd Street, 111th Street, Michigan Avenue, and 130th Street. CTA tracks would be placed in the UPRR ROW. CDOT is preparing the Far South Railroad Relocation Feasibility Study (FSRRFS). The study examines a possible project to move the existing freight operations out of the UPRR corridor, leaving the corridor vacant. The CTA would implement the ROW Option only if this separate project occurs prior to RLE. If the relocation project does not occur, then the CTA would need to choose either the East Option or West Option in order to pursue the UPRR Rail Alternative.

Figure 5-2 shows the UPRR ROW Option. The impact analysis was conducted for two segments within the UPRR Rail Alternative options. Segments UA and UB are shown on Figure 5-2. (Segment UB is the same for the three UPRR options, although impacts are not the same across all categories.) Because the traffic analysis was conducted on a regional basis, the traffic discussion was not divided into segments.

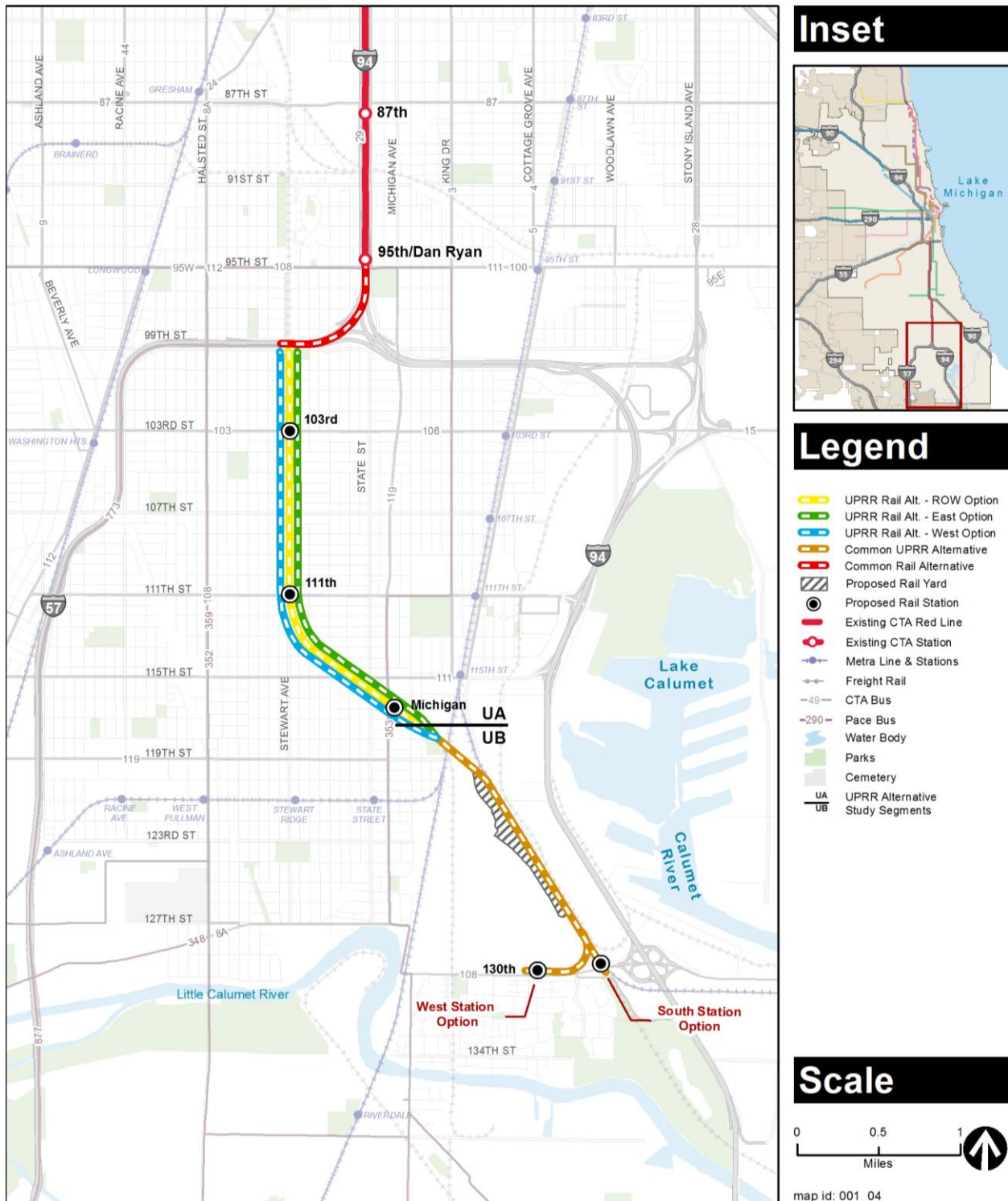


Figure 5-2: Union Pacific Railroad Rail Alternative

5.3.1 Permanent Impacts and Mitigations - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.1.1 Public Transportation

Currently the 95th Street Terminal is the southern terminus of the Red Line. Many of the existing bus routes within the project area terminate at this location. From this station, passengers continue to travel north on the Red Line or connect to a different bus route. With the expansion of the Red Line, some existing bus routes would be rerouted to feed into the proposed stations. Passengers would benefit from reduced travel times to connecting rail service, further south of the 95th Street Terminal. The transportation modeling indicates approximately 4,050 new riders for the UPRR Rail Alternative and total project weekday boardings of 41,500 (AECOM 2009).

The following describes changes to existing bus routes as a result of the UPRR ROW Option:

Segment UA

- CTA route #9 Ashland would terminate at the 103rd Street station, allowing passengers to continue to travel south of 104th Street, where the existing route #9 currently terminates. A proposed bus turnaround would be included in the surface parking lot.
- CTA route #103 West 103rd and #106 East 103rd would be combined into one route operating between a west terminal at Pulaski Road and an east terminal at Stony Island Avenue. This change would reduce the number of bus routes that terminate at 95th Street while still providing service to the proposed Red Line. This route would serve transit users east and west of the proposed UPRR Rail Alternative alignment.
- The CTA route #108 Halsted/95th would be eliminated because the addition of the rail extension would reduce the need for this express bus service.
- CTA routes #112 Vincennes/111th and #111 111th/King Drive would be restructured to simplify route paths and better serve the new alignment. Route #111 would operate on 111th Street between 111th Street/Pulaski Road and 111th Street/Corliss Avenue, serving the new 111th Street station. A new CTA route #115 would operate as a two-directional loop on 115th Street, Cottage Grove Avenue, 95th Street, and Vincennes Avenue. CTA route #112 would be eliminated.
- CTA route #119 Michigan/119th would stop at the Michigan Avenue station. This route provides service to transit users west of the proposed UPRR Rail Alternative alignment.

Segment UB

- Pace route #348 would terminate at 130th Street/I-94, extending the route from its current southern turnaround location at 136th Street/Indiana Avenue. CTA route #30 South Chicago would terminate at the 130th Street station from its current terminal at 130th Street/Exchange Avenue. Pace route #353, rather than run on the expressway to the 95th Street Terminal, would provide passengers a transfer at the 130th Street station.
- Pace routes #352 and #359 would terminate at the 111th Street station instead of 95th Street.

“User benefit” is a measure of travel time improvement for each person boarding the system. This measure indicates the overall reduction in travel time including travel to the station, wait time, transfer time, and on-transit time. For the UPRR Alternative, the average user benefit per boarding passenger would be 10 minutes (AECOM 2009). Public transportation would be restructured to supplement the UPRR Alternative, allowing patrons reduced travel times to the Loop. The congestion at 95th Street Terminal would be reduced by minimizing the number of bus transfers patrons need because they would be able to transfer to or directly board at the proposed stations.

There would be no adverse impacts on public transportation from the UPRR ROW Option. Public transportation would benefit from the UPRR ROW Option.

5.3.1.2 Traffic

Under UPRR ROW Option (2026) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-8. The traffic data and Synchro results are in Appendix D for the UPRR ROW Option. All increases in traffic volumes are related to vehicle access to park & ride facilities at stations. Under UPRR ROW Option (2026) conditions, there would be 18 intersections that would operate at an unacceptable LOS (LOS “E” or “F”) in either or both the AM and PM peak hours. Of those 18 intersections, 11 would operate at conditions worse than the No Build conditions. The intersections that would operate at worse than the No Build conditions are shown in bold in Table 5-8 and are listed below:

- 103rd Street and Halsted Street - AM LOS = F; **PM LOS = E**
- 115th Street and Michigan Avenue - **AM LOS = F**; **PM LOS = E**
- 115th Street and Cottage Grove Avenue - **AM LOS = F**; **PM LOS = F**
- 115th Street and Cottage Grove Avenue East - **AM LOS = E**
- 119th Street and Wentworth Avenue - **PM LOS = E**
- 119th Street and State Street - **AM LOS = F**; **PM LOS = F**
- 119th Street and Michigan Avenue - **AM LOS = E**
- 127th Street and Halsted Street - **AM LOS = E**; **PM LOS = F**
- 127th Street and Vermont Avenue and Wallace Street - **AM LOS = F**; **PM LOS = F**
- 127th Street and State Street - **PM LOS = E**
- 130th Street and Indiana Avenue - **AM LOS = F**; **PM LOS = F**

Under UPRR ROW Option (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-8. Under UPRR ROW Option (2030) conditions, there would be 21 intersections operating at LOS “E” or “F” in either or both the AM and PM peak hours. Of the 21 intersections, 15 would operate at worse than the No Build conditions. The following 15 intersections would operate at worse than the No Build conditions (shown in bold text in Table 5-8):

- 103rd Street and Halsted Street - AM LOS = F; **PM LOS = E**
- 111th Street and Cottage Grove Avenue - **PM LOS = E**
- 115th Street and Michigan Avenue - **AM LOS = F; PM LOS = E**
- 115th Street and Martin Luther King Drive - **AM LOS = E; PM LOS = F**
- 115th Street and Cottage Grove Avenue - **PM LOS = F**
- 115th Street and Cottage Grove Avenue East - **AM LOS = F**
- 119th Street and Ashland Avenue - **AM LOS = E; PM LOS = F**
- 119th Street and Wentworth Avenue - **PM LOS = F**
- 119th Street and State Street - **AM LOS = F; PM LOS = F**
- 119th Street and Michigan Avenue - **AM LOS = E**
- 127th Street and Halsted Street - **AM LOS = E; PM LOS = F**
- 127th Street and Vermont Avenue and Wallace Street - **AM LOS = F; PM LOS = F**
- 127th Street and State Street - **AM LOS = E; PM LOS = E**
- 130th Street and Indiana Avenue - **AM LOS = F; PM LOS = F**
- 130th Street and Ellis Avenue - **PM LOS = E**

**Table 5-8: Union Pacific Railroad Rail Alternative Right-of-Way Option (2026 and 2030)
Intersection Level of Service**

| ID | Intersection | Control Type | 2026 UPRR ROW Option | | 2030 UPRR ROW Option | |
|----|--|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | AM Peak- Hour LOS | PM Peak- Hour LOS | AM Peak- Hour LOS | PM Peak- Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | C | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | E | F | E |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | C |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | B | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |

| ID | Intersection | Control Type | 2026 UPRR ROW Option | | 2030 UPRR ROW Option | |
|-----|--|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | AM Peak- Hour LOS | PM Peak- Hour LOS | AM Peak- Hour LOS | PM Peak- Hour LOS |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | B | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | A | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | E |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | D | D |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | D | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | C | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | F | E | F | E |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | C |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | E | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | F | F | D | F |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | E | D | F | D |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | E | F |
| 60 | 119th Street and Halsted Street | Signalized | C | D | C | D |

| ID | Intersection | Control Type | 2026 UPRR ROW Option | | 2030 UPRR ROW Option | |
|----|--|--------------|----------------------|------------------|----------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | E | B | F |
| 62 | 119th Street and State Street | Signalized | F | F | F | F |
| 63 | 119th Street and Michigan Avenue | Signalized | E | B | E | B |
| 64 | 127th Street and Paulina Street | Signalized | C | D | C | D |
| 65 | 127th Street and Marshfield Avenue | Signalized | D | C | D | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | D | C | D |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | E | F | E | F |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | F | F | F | F |
| 71 | 127th Street and State Street | Signalized | D | E | E | E |
| 72 | 127th Street and Michigan Avenue | Signalized | A | D | B | D |
| 73 | 130th Street and Indiana Avenue | Signalized | F | F | F | F |
| 74 | 130th Street and Ellis Avenue | Signalized | A | D | B | E |

Notes:

UPRR = Union Pacific Railroad, LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

Mitigation measures to reduce or minimize the impacts were evaluated for the transportation network surrounding the UPRR ROW Option. Mitigation measures for intersections near the affected intersection may also be necessary to provide better flow of traffic; therefore, the provided mitigation measures include the affected intersections as well as adjacent or nearby intersections. Table 5-9 lists the mitigation measures that would address impacts on the study intersections under UPRR ROW Option (2030) conditions. At intersections where adverse impacts are expected, potential mitigation measures have been identified to offset the portion of the LOS deterioration attributable to the RLE Project.

Table 5-9: Mitigation Measures for the Union Pacific Railroad Rail Alternative Right-of-Way Option (2030) Conditions

| ID | Intersection | Mitigation Measure |
|-----|--|---|
| 16 | 103rd Street and Halsted Street | PM: Optimize cycle length/splits. |
| 41 | 111th Street and Cottage Grove Avenue | PM: Optimize splits. |
| 52 | 115th Street and Michigan Avenue | AM: Optimize splits. PM: Optimize cycle length/splits. |
| 54 | 115th Street and Martin Luther King Drive | Remove on-street parking lane for additional through eastbound/westbound lane on 115th Street. |
| 55a | 115th Street and Cottage Grove Avenue | AM/PM: Optimize Cycle length. Optimize PM splits. |
| 55b | 115th Street and Cottage Grove Avenue East | AM/PM: Optimize Cycle length. Optimize PM splits. |
| 59 | 119th Street and Ashland Avenue | PM: Optimize splits |
| 61 | 119th Street and Wentworth Avenue | PM: Optimize splits |
| 62 | 119th Street and State Street | AM/PM: Optimize splits. |
| 63 | 119th Street and Michigan Avenue | AM: Optimize splits. |
| 64 | 127th Street and Paulina Street | AM/PM: Optimize cycle length/splits. |
| 65 | 127th Street and Marshfield Avenue | AM/PM: Optimize cycle length/splits. |
| 66 | 127th Street and Ashland Avenue | AM/PM: Optimize cycle length/splits. |
| 68 | 127th Street and Halsted Street | AM/PM: Optimize cycle length and splits. |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Add additional northeast right turn lane. Change westbound through/left to dedicated westbound left turn lane. Restrict northeast bound to northbound movement. Actuate signal. Optimize cycle length/splits. |
| 71 | 127th Street and State Street | AM/PM: Optimize cycle length/splits |
| 72 | 127th Street and Michigan Avenue | PM: Optimize cycle length/splits |
| 73 | 130th Street and Indiana Avenue | AM/PM: Add northbound right turn lane. Optimize cycle length/splits |
| 74 | 130th Street and Ellis Avenue | PM: Optimize splits |

Under UPRR ROW Option mitigated (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-10. Under UPRR ROW Option mitigated (2030) conditions, some intersections would operate at LOS “E” or “F;” however, these intersections would be no worse than No Build (2030) conditions. Mitigated conditions would not result in additional intersections with unacceptable LOS. As such, there would be no adverse permanent traffic impacts for this alternative. Coordination regarding LOS thresholds was conducted with IDOT and CDOT. LOS D is considered to be acceptable for urban areas.

Table 5-10: Union Pacific Railroad Rail Alternative Right-of-Way Option Mitigated Alternative (2030) Intersection Level of Service

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 UPRR ROW Option Mitigated | |
|----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | D | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | D | F | C |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | C |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | A | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 UPRR ROW Option Mitigated | |
|-----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | A | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | B | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | C |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | D | D |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | E | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | B | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | D | B | C |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | C |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | D | C | B | C |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | E | C | C | B |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 UPRR ROW Option Mitigated | |
|----|--|--------------|---------------------------|------------------|--------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C | C | D |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | B | B | C | B |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A | C | B |
| 64 | 127th Street and Paulina Street | Signalized | C | C | B | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C | C | C |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | C | C | C | D |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | D | D | C | D |
| 71 | 127th Street and State Street | Signalized | B | B | B | C |
| 72 | 127th Street and Michigan Avenue | Signalized | A | B | B | C |
| 73 | 130th Street and Indiana Avenue | Signalized | C | C | D | D |
| 74 | 130th Street and Ellis Avenue | Signalized | A | A | B | B |

Notes:

UPRR = Union Pacific Railroad, ROW = right-of-way, LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

5.3.1.3 Freight Transportation

Rail

As part of the UPRR ROW Option the UPRR trains would be relocated to another corridor as part of a separate, earlier project that may occur regardless of the RLE implementation; therefore, no adverse permanent impacts would result from by UPRR operations. There would be no adverse permanent impacts on the CN or IHB freight operations.

Truck

The biggest challenge to the trucking industry is highway congestion, according to the *GO TO 2040 Regional Plan*. Congestion data prepared by CMAP shows that on several corridors where

truck volumes are over 10,000 per day, congestion during morning peak periods increases travel times an average of 60 percent. The 130th Street station park & ride facility may divert motorists from I-94 commuting into the city during these peak periods. With the extension of the Red Line to 130th Street, the regional vehicle-miles traveled would be reduced by 0.02 percent, removing some motorists from the surrounding roadways (CMAP 2012b).

5.3.1.4 Bicycle Facilities

Under the UPRR ROW Option there would be no adverse permanent impacts on existing or recommended bike routes. Recommended bike routes along 103rd, 107th, 111th, and 115th Streets have the potential to be used by bicyclists to access the RLE (see Figure 4-6). The stations for the UPRR Alternative would have bicycle parking to accommodate bicyclists. This alternative would create easy and efficient transit connections to the RLE and the larger network of CTA stops and stations for bicyclists.

5.3.1.5 Pedestrians

The UPRR ROW Option would provide pedestrians with more choices, flexibility, and potentially reduced travel times as compared to other UPRR options. Under this option the existing at-grade crossings at 101st Street, 103rd Street, 107th Street, 109th Street, 111th Street, 115th Street, and State Street would no longer be active railroad crossings. This change would improve pedestrian safety at the 103rd Street, 111th Street, and Michigan Avenue stations as compared to other UPRR options.

Implementing the UPRR ROW Option would result in beneficial impacts at stations by upgrading intersections with ADA-compliant curb ramps and replacing deteriorated sidewalks. These improvements would provide access for all users and increase pedestrian safety.

Segment UA

103rd Street Station

Existing striped crosswalks at Eggleston Avenue and 103rd Street and Harvard Avenue and 103rd Street could be used to access the station and the surface parking lots. These crosswalks would be improved with the construction of the proposed surface lots. Entrances to the station would be near the surface parking lots, allowing for a direct route from the platform to the parking lot, allowing users to avoid crossing 103rd Street. The entrance to the parking lot east of the station would be in the southeast corner of the parking lot. The parking lot on the south side of 103rd Street would have an entrance at the intersection of 103rd Street and Eggleston Avenue, allowing cars to leave the parking lot farther away from the station, where the majority of pedestrian traffic would occur. All of these improvements would contribute to convenient, safe, and secure access for all users.

111th Street Station

Because the majority of the existing properties adjacent to the existing railroad tracks are undeveloped, sidewalks would need to be provided for pedestrian access to the primary and

auxiliary entrances of the proposed station. Existing striped crosswalks are not close to the location of the proposed station's primary entrance. The surface parking lots would be on the east and west side of the station, allowing for a direct route from the platform to the parking lot, in which users could avoid crossing 111th Street. The east surface parking lot would have an entrance at the southeast corner of the lot and the west surface parking lot would have an entrance along Eggleston Avenue. Both of these entrances would be away from the proposed station location where the majority of pedestrian traffic would occur. Eggleston Avenue is currently a dead-end street and has little traffic. The majority of traffic on the street would occur from the surface parking lot. All of these improvements would contribute to convenient, safe, and secure access for all users.

Potential pedestrian conflicts with vehicular traffic would be mitigated through the addition of a striped crosswalk on 111th Street at the location of the primary entrance due to the tendency of pedestrians to cross at the entrance/exit of the station.

Michigan Avenue Station

The existing pedestrian access on 116th Street east of Michigan Avenue would be improved with the construction of the surface lot and the auxiliary station entrance. The existing viaduct and existing sidewalks would be replaced, providing a continuous ADA-accessible route east and west of the station and sidewalk connectivity to the existing homes east of the station on 116th Street. The parking garage would be located close to the primary entrance of the proposed station, allowing commuters who park in this garage to avoid crossing Michigan Avenue or 116th Street. Parking lot entrances would be on State Street and 116th Street, which are a good distance from the station, where pedestrian traffic would be concentrated. The surface parking lot would be near the auxiliary entrance of the station. Commuters would have a direct route from the surface lot to the platform without any need to cross 116th Street.

Segment UB

130th Street Station

- **South Station Option:** The existing parcels in the location of the proposed station are currently undeveloped land. Proposed sidewalks along 130th Street and Ellis Avenue, as well as striped crosswalks at the intersection of 130th Street and Ellis Avenue, would provide a safe pedestrian access for the Altgeld Gardens neighborhood residents. The auxiliary entrance would also provide direct access to the Altgeld Gardens neighborhood by eliminating the need to cross 130th Street. It would also provide access to students and faculty at the Carver Military Academy High School, east of the station on Doty Avenue.
- **West Station Option:** Part of the proposed station improvements include sidewalks along 130th Street and Evans Avenue, a proposed traffic signal, and marked crosswalks. These improvements would provide a continuous ADA-accessible route from the Altgeld Gardens neighborhood to the station.

There would be no adverse impacts on pedestrians from the UPRR ROW Option.

5.3.1.6 Parking

The UPRR ROW Option alignment is within the existing ROW of the UPRR. On-street parking restrictions already exist at the railroad crossings. There would be no impact on on-street parking due to the proposed stations. Existing bus stops are on 103rd Street and 111th Street at the location of the proposed stations. These existing stops already have a no parking zone in the locations of the existing bus lanes, so there would be no impact on on-street parking due to bus stop locations. There are two existing bus stops on Michigan Avenue from Kensington Avenue to 116th Street. These existing bus stop locations could serve the proposed station; therefore, no on-street parking would be affected by adding bus stop locations.

Each of the proposed stations would have surface parking lots and/or parking garages, which would expand the reach of the RLE and provide an opportunity for users to access the station by car. Users may benefit from reduced travel time and reduced travel cost by riding the Red Line. Another benefit would be that motorists could be diverted from congested sections of roadway. Sufficient parking capacity would be provided in all locations to avoid spillover parking into the residential areas near the station locations. Table 5-11 presents a summary of the proposed parking for each of the stations.

Segment UA

Table 5-11: Segment UA Proposed Park & Ride Facilities

| Station | Parking Type | Capacity | Location | Description |
|-----------------|----------------------------|----------|---|---|
| 103rd Street | Surface lot | 100 | East of station, North side of 103rd Street | Bus turnaround within the lot for route #9 |
| | Surface lot | 100 | Adjacent to station on the south side of 103rd Street | |
| 111th Street | Surface lot | 100 | East of station. North side of 111th Street | |
| | Surface lot | 100 | West of station. North side of 111th Street | Bus turnaround within the lot for route #352 |
| Michigan Avenue | Three-Story Parking Garage | 750 | Southwest of station | Parking garage with ground level available for retail and/or community facilities. Bus turnaround on the ground level for route #119 and #359 |
| | Surface lot | 250 | Located northeast of the station. | |

Segment UB

130th Street Station

There would be no adverse impact on any existing off-street or on-street parking as a result of the South Station Option or the West Station Option. Each of the station options would include a bus terminal with four bus bays and an overhead canopy. A park & ride facility with 2,300 parking spaces would be constructed by 2030 for the South Station Option. The West Station Option would include a park & ride facility with 1,950 parking spaces plus a surface lot with 350 parking spaces. The park & ride facility would be near the I-94 Bishop Ford Freeway and 130th Street interchange. This facility would expand the reach of the RLE to the south suburban and northwest Indiana automobile commuters. These commuters could benefit from decreased travel times and cost by riding the Red Line and avoiding congestion and travel delays on the Dan Ryan Expressway. See Table 5-12 for summary of proposed parking options for the 130th Street station.

Table 5-12: Segment UB Proposed Park & Ride Facilities

| Station | Parking Type | Capacity | Location | Description |
|-----------------------------------|----------------------------|----------|---|--|
| 130th Street South Station Option | Seven-Story Parking Garage | 2,300 | North of 130th Street adjacent to the NICTD/CSS & SBRR tracks | Bus terminals with 4 bus bays and an overhead canopy |
| 130th Street West Station Option | Four-Story Parking Garage | 1,950 | North of 130th Street | Bus terminals with 4 bus bays and an overhead canopy |
| | Surface lot | 350 | | |

5.3.2 Construction Impacts and Mitigations - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.2.1 Public Transportation

Bus Transit

The construction activities associated with the UPRR ROW Option would temporarily affect the physical capacity of roadways and intersections requiring detours. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for bus transit users. Bus stop locations may be eliminated or relocated temporarily and buses rerouted during construction activities. Bus stops for routes intersecting the UPRR Alternative (#34, #103, #111, and #115) will have changes only when construction activities are in the vicinity of the applicable crossing. With adherence to local, state, and federal construction and temporary traffic and public transportation management guidelines, no adverse construction impacts from the UPRR ROW Option would result.

Commuter Rail

The UPRR ROW Option would consist of new construction of dual-track, elevated structure within the UPRR ROW, branching off and running along the east side of the corridor and over

existing CN/ME tracks. Construction at the CN/ME crossing would be phased to minimize the impacts on Metra operations. This impact is expected only in segment UB.

During new track roadbed construction for the 120th Street yard and shop and the new access road for the existing MWRD facility, construction over and adjacent to the NICTD/CSS & SBRR ROW would occur. Flagging operations and scheduled track closures would occur during these construction activities. Construction would be phased to minimize the impacts on passenger trains.

5.3.2.2 Traffic

Construction activities associated with this alternative would temporarily affect the physical capacity of local roadways and intersections. This may lead to increased travel times, possible shift in traffic volumes, and the need to reroute traffic patterns during construction. On the local streets, steel beam placement across a street would require temporary shutdown of traffic across the crossing. Detours would be to adjacent parallel streets with existing crossings of the UPRR tracks.

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-94.

Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, temporary shutdown of all traffic would be required at nighttime, per IDOT approval, typically at times of low traffic volume. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-57. With adherence to local, state, and federal construction and temporary traffic management guidelines, no lasting adverse traffic impacts would result from the UPRR ROW Option.

5.3.2.3 Freight Transportation

Segment UA

Rail

The UPRR ROW Option would consist of new construction of a dual-track, elevated structure within the UPRR corridor, branching off and running along the east side of the corridor and over existing CN/ME tracks. There would be no impact on the UPRR operations due to construction activities because UPRR trains would be relocated to another corridor as part of a separate, earlier project.

Truck

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-94.

Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown (typically no more than 15-minute increments) of all traffic would be required at nighttime, per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-57.⁴

Segment UB

Construction at the CN/ME crossing would be phased to minimize the impacts on CN and Metra operations. Railroad flagging and scheduled track closures would be needed to construct the crossing.

During new track roadbed construction for the 120th Street yard and shop and the new access road for the existing MWRD facility, construction over and adjacent to the NICTD/CSS & SBRR ROW would occur. Flagging operations and scheduled track closures would also occur during these construction activities. Construction would be phased to minimize impacts on freight operations.

A portion of the new track alignment would be constructed over IHB tracks north of 130th Place. Construction activities would be coordinated with IHB railroad to ensure that no construction activities would affect freight operations.

5.3.2.4 Bicycle Facilities

Bicyclists using recommended low traffic residential streets such as 103rd Street, 111th Street, or 115th Street may incur increased travel times due to detours or increase vehicular traffic due to construction activities.

5.3.2.5 Pedestrians

Due to the construction of the aerial structure and stations, sidewalks would need to be temporarily closed during these construction activities. Increased travel distance and time may be incurred due to pedestrian traffic reroutes.

⁴ Per IDOT Average Daily Truck Traffic maps, an average of 5,700 trucks per day travel along I-57 just east of Halsted Street. Based on time-of-day truck distribution, less than one percent of this daily average travel during each hour between midnight and 4:00 AM weekdays.

5.3.2.6 Parking

On-street parking would be temporarily affected during construction of the aerial structure and stations. Construction of park & ride lots would also contribute to temporary on-street parking loss due to maintenance of traffic during construction activities.

5.3.3 Cumulative Impacts and Mitigations - Union Pacific Railroad Rail Alternative - Right-of-Way Option

There would be no adverse cumulative impacts due to the implementation of the UPRR ROW Option. Cumulative benefits, related to the earlier project to remove UPRR trains from the corridor, include decreased delay for vehicles and buses at at-grade railroad crossings and increased pedestrian safety at the crossings.

5.3.4 120th Street Yard and Shop

A 270-car yard and shop facility would be constructed on a combination of industrial/vacant land to the east of the CN/ME tracks and west of the NICTD/CSS & SBRR tracks at approximately 120th Street and Cottage Grove Avenue. The yard would be entirely at grade. A nominal amount of parking for employees would be included at the yard. A substation is tentatively proposed for a location within the 120th Street yard, west of the existing railroad tracks and east of the proposed shop facility.

5.3.4.1 Permanent Impacts and Mitigations

Under the UPRR ROW Option there would be no permanent impacts on bicycle or pedestrians because the existing site is a combination of industrial and vacant land. Pedestrian access by the general public would be restricted and discouraged. Because of the location of the yard, no public transportation or parking facilities would be affected by this alternative. Some proposed parking would be provided for yard employees.

5.3.4.2 Construction Impacts and Mitigations

During new track roadbed construction for the 120th Street yard and shop and the new access road for the existing MWRD facility, construction over and adjacent to the NICTD/CSS & SBRR ROW would occur. Flagging operations and scheduled track closures would also occur during these construction activities. Construction would be phased to minimize impacts on MWRD operations and NICTD/CSS & SBRR operations.

5.4 Union Pacific Railroad Rail Alternative - East Option

The UPRR Rail Alternative East Option would include construction of an elevated structure following an alignment similar to that of the UPRR ROW Option. The difference is that CTA tracks would be placed immediately adjacent to and east of the UPRR ROW Option alignment. Four stations would be included at 103rd Street, 111th Street, Michigan Avenue, and 130th Street.

5.4.1 Permanent Impacts and Mitigations - Union Pacific Railroad Rail Alternative - East Option

5.4.1.1 Public Transportation

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.1 for permanent impacts on public transportation in Segments UA and UB.

5.4.1.2 Traffic

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.2 for permanent traffic impacts. Delays waiting for freight trains to pass through at-grade crossings would be similar to the No Build Alternative.

5.4.1.3 Freight Transportation

Rail

As part of the East Option, the UPRR tracks would continue to be operational. Because the proposed track would be elevated, there would be no permanent impacts on the UPRR freight train operations. Future freight train movements on the UPRR track may increase, causing additional delays to motorists at at-grade crossings; however, freight train movements typically occur during off-peak traffic travel times.

Truck

The East Option would have a similar impact on freight truck operations as the UPRR ROW Option. Because the proposed track would be elevated, there would be no impact on truck routes. The 130th Street station park & ride facility may divert motorists from I-94 commuting into the city during these peak periods. This may help alleviate congestion on the expressway, reducing freight truck travel times and cost.

5.4.1.4 Bicycle Facilities

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.4 for permanent impacts on bicyclists.

5.4.1.5 Pedestrians

The East Option would provide pedestrians with more mode choices, flexibility, and potentially reduced travel times as compared to the No Build Alternative. This option alignment is east of the existing UPRR tracks. The existing at-grade crossings at 101st Street, 103rd Street, 107th Street, 109th Street, 111th Street, 115th Street, and State Street would remain.

Implementing the East Option would result in beneficial impacts at stations by upgrading intersections with ADA-compliant curb ramps and replacing deteriorated sidewalks. These improvements would provide access for all users and increase pedestrian safety.

Segment UA***103rd Street Station***

Existing striped crosswalks at Eggleston Avenue and 103rd Street, and Harvard Avenue and 103rd Street, could be used to access the station and the surface parking lots. These crosswalks would be improved with the construction of the proposed surface lots. Entrances to the station would be near the surface parking lots, allowing for a direct route from the platform to the parking lot. The location of the surface lot west of the UPRR tracks would require pedestrians to cross the tracks to access the station. Existing railroad crossing signals with road gates and railroad crossing pavement markings are at the crossing on 103rd Street. Pedestrian gates would need to be installed to prevent pedestrians from crossing the active UPRR tracks during freight movements. The parking lot on the south side of 103rd Street would have an entrance at the intersection of 103rd and Eggleston Avenue, allowing cars to leave the parking lot farther away from the station, where the majority of pedestrian traffic would occur. The entrance to the parking lot east of the proposed station would be in the southeast corner of the parking lot. All of these improvements would contribute to convenient, safe, and secure access for all users.

There would be no adverse impacts on pedestrians after mitigating for pedestrian crossing gates at 103rd street.

111th Street Station

Because the majority of the properties adjacent to the existing railroad tracks are currently undeveloped, proposed sidewalks would need to be provided for pedestrian access to the primary and auxiliary entrances of the station. Existing striped crosswalks are not close to the proposed primary entrance of the station. The surface parking lots would be on the east and west sides of the station, allowing for a direct route from the platform to the parking lot in which users could avoid crossing 111th Street. The location of the surface lot west of the UPRR tracks would require pedestrians to cross the tracks to access the station. Existing railroad crossing signals with road gates and railroad crossing pavement markings are at the crossing on 111th Street. The east surface parking lot would have an entrance at the southeast corner of the lot and the west surface parking lot would have an entrance along Eggleston Avenue. Both of these entrances would be away from the proposed station location, where the majority of pedestrian traffic would occur. Eggleston Avenue north of 11th Street is a dead-end street less than one block in length. The majority of traffic on the street would occur from the surface parking lot. All of these improvements would contribute to convenient, safe, and secure access for all users.

There would be no adverse impacts after mitigating for the pedestrian crossing gates at 111th Street and providing striped crosswalks.

Michigan Avenue Station

The existing pedestrian access on 116th Street east of Michigan Avenue would be improved with the construction of the surface lot and the auxiliary station entrance. The sidewalk under and adjacent to the existing viaduct for the UPRR tracks would be replaced, providing a continuous

ADA-accessible route east and west of the station and sidewalk connectivity to the existing residential homes east of the station on 116th Street. The parking garage would be close to the primary entrance of the station, allowing commuters who park in this garage to avoid crossing Michigan Avenue or 116th Street. Pedestrians would not have to cross the UPRR tracks on 116th Street or Michigan Avenue, because the tracks would be elevated. There would be an entrance on State Street and 116th Street, which would be a good distance from the station, where pedestrian traffic would be concentrated. The surface parking lot would be near the auxiliary entrance of the station. Commuters would have a direct route from the surface lot to the platform without any need to cross 116th Street.

Segment UB

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.5 for permanent impacts on Segment UB.

5.4.1.6 Parking

Each of the station locations would have surface parking lots and/or parking garages. These parking facilities would expand the reach of the RLE and provide an opportunity for users to access the station by car. These users may benefit from reduced travel time and reduced travel cost. Another benefit would be that motorists could be diverted from congested sections of roadway. Sufficient parking capacity would be provided in all locations to avoid spillover parking into the residential areas near the station locations. Table 5-13 presents a summary of the proposed parking for each of the stations.

Segment UA

Table 5-13: Union Pacific Railroad Rail Alternative East Option Park & Ride Facilities

| Station | Parking Type | Capacity | Location | Description |
|-----------------|----------------------------|----------|--|---|
| 103rd Street | Surface Lot | 75 | East of proposed station, North side of 103rd Street | Bus turnaround within the lot for route #9 |
| | Surface Lot | 125 | West of proposed station on the south side of 103rd Street | |
| 111th Street | Surface Lot | 55 | East of proposed station. North side of 110th Place | |
| | Surface Lot | 145 | West of proposed station. North side of 111th Street | Bus turnaround within the lot for route #352 |
| Michigan Avenue | Three-Story Parking Garage | 825 | Southwest of proposed station | Parking garage with ground level available for retail and/or community facilities. Bus turnaround on the ground level for route #119 and #359 |
| | Surface Lot | 175 | Located northeast of the station. | |

Segment UB

130th Street Station

The 130th Street South Station Option and West Station Option would be the same for all of the UPRR Rail Alternatives. Refer to Section 5.3.1.6, for permanent impacts on Segment UB Parking Facilities.

5.4.2 Construction Impacts and Mitigations - Union Pacific Railroad Rail Alternative - East Option

5.4.2.1 Public Transportation

Bus Transit

- The construction activities associated with the East Option would temporarily affect the physical capacity of roadways and intersections requiring detours. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for bus transit users. Bus stop locations may be eliminated or relocated temporarily and buses rerouted during construction activities. With adherence to local, state, and federal construction and temporary traffic and public transportation management guidelines, no adverse impacts would result from the East Option.

Commuter Rail***Segment UA***

The East Option would consist of new construction of dual-track, elevated structure immediately adjacent to and east of the UPRR ROW, branching off and running along the east side of the corridor and over existing CN/ME tracks.

Segment UB

Refer to Section 5.3.2.1 for construction impacts on Segment UB.

5.4.2.2 Traffic

The construction activities associated with this alternative would temporarily affect the physical capacity of local roadways and intersections. This may lead to increased travel times, possible shift in traffic volumes, and the need to reroute traffic patterns during construction.

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-94.

The East Option alignment curves over I-57 and runs parallel to the UPRR tracks. Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Temporary shutdown of other traffic lanes (for work in the adjacent median) would occur at nighttime and low traffic volume intervals per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-57.

With adherence to local, state, and federal construction and temporary traffic management guidelines, no lasting adverse traffic impacts would result from the East Option.

5.4.2.3 Freight Transportation***Segment UA******Rail***

The East Option would consist of new construction of dual-track, elevated structure immediately adjacent to and east of the UPRR ROW, branching off and running along the east side of the corridor and over existing CN/ME tracks. The East Option would require construction activities to occur while UPRR tracks are operational. The work would be sequenced along the UPRR corridor to minimize impacts on UPRR operations. Construction adjacent to railroads would require flagging operations and scheduled track closures. Signal devices would need to be moved

or temporary signals installed to replace existing signals during construction of viaducts for the following at-grade crossings: 101st Street, 103rd Street, 107th Street, 109th Street, 111th Street, 115th Street, and State Street.

Truck

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-94.

The East Option alignment curves over I-57 and runs parallel to the UPRR tracks. Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Temporary shutdown of other traffic would occur at nighttime and low traffic volume intervals per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-57.

Segment UB

Refer to Section 5.3.2.3 for construction impacts on Segment UB related to freight transportation.

5.4.2.4 Bicycle Facilities

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.2.4 for construction impacts on bicyclists.

5.4.2.5 Pedestrians

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.2.5 for construction impacts on pedestrians.

5.4.2.6 Parking

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.2.6 for construction impacts on parking facilities.

5.4.3 Cumulative Impacts and Mitigations - Union Pacific Railroad Rail Alternative - East Option

5.4.3.1 Segment UA

Freight Transportation

The Chicago Region Environmental and Transportation Efficiency (CREATE) Program 75th Street Corridor Improvement Project (CIP) consists of the following improvements:

- Reconfiguring the Belt Railway of Chicago main tracks between the Dan Ryan and Belt Junction, where there are existing conflicts between the freight railroads and Metra SouthWest Service.
- Reconfiguring and building a third Belt Railway Company main track, and constructing a flyover to connect the Metra SouthWest Service to the RI District Line in the vicinity of 74th Street and Normal Avenue and 75th Street and Parnell Avenue.
- Constructing a bridge that substantially reduces conflicts between CSX and Belt Railway Company, Metra (Rock Island District) and NS.
- Road-rail grade separation of 71st Street and CSX freight line north of project boundary

The corridor improvements would be north of the proposed UPRR Rail Alternative alignments. Table 5-14 summarizes the CIP train model volumes based on the above improvements for the UPRR.

Table 5-14: Existing and Forecast Train Volumes for Union Pacific Railroad South of 86th Street

| | Peak Day | Passenger | Freight | Total |
|--|----------|-----------|---------|-------|
| Existing Volumes (2009) | Friday | 2 | 24 | 26 |
| Forecast Volumes (2029 No Build) | Friday | 4 | 23 | 27 |
| Forecast Volumes (2029 Build Alternative) | Saturday | 4 | 44 | 48 |

Source: CREATE 75th Street Corridor Improvement Project train model. In this table, “No Build” and “Build Alternative” refer to the CREATE Project.

Freight volumes would increase substantially by the forecasted 2029 build year. Because the UPRR tracks would remain in the East Option, freight trains may have potential impacts on pedestrian and vehicular traffic near the proposed stations. This could affect travel times for bus transit servicing the station and increase delays for commuters who choose to park & ride.

5.4.3.2 Segment UB

There would be no adverse cumulative impacts on Segment UB of the East Option.

5.5 Union Pacific Railroad Rail Alternative - West Option

The UPRR Rail Alternative West Option would include construction of an elevated structure following a similar alignment to the UPRR ROW Option. The difference is that CTA tracks would be placed immediately adjacent to and west of the UPRR ROW. Four stations would be included at 103rd Street, 111th Street, Michigan Avenue, and 130th Street.

5.5.1 Permanent Impacts and Mitigations - Union Pacific Railroad Rail Alternative - West Option

5.5.1.1 Public Transportation

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.1 for permanent impacts on public transportation in Segment UA and Segment UB.

5.5.1.2 Traffic

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.2 for permanent traffic impacts. Delays waiting for freight trains to pass through the at-grade crossings would be similar to the No Build Alternative. (The UPRR West Option would not receive the same benefit as the UPRR ROW Option with regard to removal of delay due to freight trains on the UPRR tracks.)

5.5.1.3 Freight Transportation

Rail

As part of the West Option, the UPRR tracks would continue to be operational. Because the proposed rail would be elevated, there would be no permanent impacts on the UPRR train operations.

Truck

The West Option would have a similar impact on freight truck operations as the East Option. Because the track would be elevated, there would be no impact on truck routes. The 130th Street station park & ride facility may divert motorists from I-94 commuting into the city during these peak periods. This may help alleviate congestion on the expressway, reducing freight truck travel times and cost.

5.5.1.4 Bicycle Facilities

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.4 for permanent impacts on bicyclists in Segment UA and Segment UB.

5.5.1.5 Pedestrians

The West Option would provide pedestrians with more choices, flexibility, and potentially reduced travel times as compared to No Build. The existing at-grade crossings at 101st Street, 103rd Street, 107th Street, 109th Street, 111th Street, 115th Street, and State Street would remain. All parking facilities for each station would be west of the UPRR tracks. Commuters who park & ride would not have to cross the UPRR tracks. Railroad crossing signals with road gates and railroad crossing pavement markings exist at all existing at-grade crossings. Some pedestrians traveling from the east would need to cross the UPRR tracks to access the station; therefore, during the design phase, additional pedestrian control devices, such as increased lighting and gates at the sidewalk, would be considered to improve pedestrian safety at the crossings. All railroad track crossings would be ADA-compliant.

Implementing the West Option would result in beneficial impacts at stations by upgrading intersections with ADA-compliant curb ramps and replacing deteriorated sidewalks. These improvements would provide access for all users and increase pedestrian safety.

Segment UA

103rd Street Station

Existing striped crosswalks at Eggleston Avenue and 103rd Street, and Harvard Avenue and 103rd Street, could be used to access the station. These crosswalks would be improved with the construction of the proposed bus turnaround and station. The auxiliary entrance to the station would be within the surface parking lot, allowing for a direct route from the platform to the parking lot. The parking lot on the south side of 103rd Street would have an entrance at 103rd Place, allowing cars to leave the parking lot farther away from the station, where the majority of pedestrian traffic would occur. All of these improvements would contribute to convenient, safe, and secure access for all users.

111th Street Station

Because the majority of the existing properties adjacent to the existing railroad tracks are undeveloped, proposed sidewalks would need to be provided for pedestrian access to the primary and auxiliary entrances of the proposed station. Existing striped crosswalks are not close to the location of the primary entrance of the station. It would be beneficial to add a striped crosswalk on 111th Street at the location of the primary entrance, as this is likely to be the area that passengers would cross to access the south side of 111th Street. The surface parking lot would be on the west side of the station, which would allow for a direct route from the platform to the parking lot in which users could avoid crossing 111th Street. The west surface parking lot would have an entrance at Eggleston Avenue. This entrance would be away from the proposed station location, where the majority of pedestrian traffic would occur. Eggleston Avenue is currently a dead-end street and has little traffic. The majority of traffic on the street would occur from the surface parking lot. All of these improvements would contribute to convenient, safe, and secure access for all users.

Michigan Avenue Station

The existing pedestrian access on 116th Street east of Michigan Avenue would be improved with the construction of the station. The sidewalk under and adjacent to the existing viaduct for the UPRR tracks would be replaced, providing a continuous ADA-accessible route east of the station and sidewalk connectivity to the existing residential homes east of the station on 116th Street. The parking garage would be close to the primary entrance of the station. Commuters who park in this garage would not have to cross Michigan Avenue or 116th Street. There would be an entrance on State Street and 116th Street, which are a good distance from the station, where pedestrian traffic would be concentrated.

Segment UB

The UPRR Rail Alternative option alignments are in similar locations. See Section 5.3.1.5 for permanent impacts on Segment UB.

5.5.1.6 Parking

Each of the station locations would have surface parking lots and/or parking garages. These parking facilities would expand the reach of the RLE and provide an opportunity for commuters to access the station by car. These commuters may benefit from reduced travel time and reduced travel cost by riding the Red Line. Another benefit would be that motorists could be diverted from congested sections of roadway. Sufficient parking capacity would be provided in all locations to avoid spillover parking into the residential areas near the station locations. Table 5-15 provides a summary of the proposed parking for each of the stations.

Segment UA

Table 5-15: Union Pacific Railroad Rail Alternative West Option Park & Ride Facilities

| Station | Parking Type | Capacity | Location | Description |
|-----------------|---------------------------|----------|--|---|
| 103rd Street | Surface Lot | 200 | North of 104th Street adjacent to proposed station | Bus turnaround east of proposed station and north of 103rd Street for route #9. No parking provided. |
| 111th Street | Surface Lot | 200 | West of proposed station. North side of 111th Street | Bus turnaround within the lot for route #352 |
| Michigan Avenue | Five-Story Parking Garage | 1000 | Southwest of proposed station | Parking garage with ground level available for retail and/or community facilities. Bus turnaround on the ground level for route #119 and #359 |

Segment UB

130th Street Station

The 130th Street South Station Option and West Station Option would be the same for all of the UPRR Rail Alternatives. Refer to Section 5.3.1.6, for permanent impacts on segment UB parking facilities.

5.5.2 Construction Impacts and Mitigations - Union Pacific Railroad Rail Alternative - West Option

5.5.2.1 Public Transportation

Bus Transit

The construction activities associated with the West Option would temporarily affect the physical capacity of roadways and intersections requiring detours. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for bus transit users. Bus stop locations may be eliminated or relocated temporarily and buses rerouted during construction

activities. With adherence to local, state, and federal construction and temporary traffic and public transportation management guidelines, no adverse impacts would result from the West Option.

Commuter Rail

Segment UA

The West Option would consist of new construction of dual-track, elevated structure immediately adjacent to and east of the UPRR ROW, branching off and running along the east side of the corridor and over existing CN/ME tracks.

Segment UB

Refer to Section 5.3.2.1 for construction impacts on Segment UB.

5.5.2.2 Traffic

The construction activities associated with this alternative would temporarily affect the physical capacity of local roadways and intersections. This may lead to increased travel times and possible shift in traffic volumes and the need to reroute traffic patterns during construction.

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-94.

Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Temporary shutdown of other traffic would occur at nighttime and low traffic volume intervals per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-57.

With adherence to local, state, and federal construction and temporary traffic management guidelines, no adverse traffic impacts would result from the West Option.

5.5.2.3 Freight Transportation

Segment UA

Rail

The West Option would consist of new construction of dual-track, elevated structure crossing over the UPRR at Fernwood Parkway just south of I-57 and continuing immediately adjacent to and west of the UPRR ROW, crossing over the UPRR tracks again at Prairie Avenue and running

along the east side of the corridor and over existing CN/ME tracks. The West Option would require the construction activities to occur while UPRR tracks are operational. This alternative would have two additional crossings over the active UPRR tracks at Fernwood Parkway and Prairie Avenue that the East option would not have. Construction at this crossing would be phased to minimize impacts on UPRR freight operations. Construction adjacent to railroads would require flagging operations and scheduled track closures. Signal devices would need to be moved or temporary signals installed to replace existing signals during construction of viaducts for the following at-grade crossings: 101st Street, 103rd Street, 107th Street, 109th Street, 111th Street, 115th Street, and State Street. Construction activities would be phased to reduce construction impacts on the UPRR operations as much as possible.

Truck

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-94.

Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Temporary shutdown of other traffic would occur at nighttime and low traffic volume intervals per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-57.

Segment UB

Refer to Section 5.3.2.3 for construction impacts on Segment UB related to freight transportation.

5.5.2.4 Bicycle Facilities

The UPRR Rail Alternative options would have similar alignments. See Section 5.3.2.4 for construction impacts on bicyclists.

5.5.2.5 Pedestrians

The UPRR Rail Alternative options would have similar alignments. See Section 5.3.2.5 for construction impacts on pedestrians.

5.5.2.6 Parking

The UPRR Rail Alternative options would have similar alignments. See Section 5.3.2.6 for construction impacts on parking facilities.

5.5.3 Cumulative Impacts and Mitigations - Union Pacific Railroad Rail Alternative - West Option

See Section 5.4.3 for cumulative impacts on freight transportation. Because the UPRR tracks would still be in operation under both the East and West Options, the impacts would be the same under the East and West Options.

5.6 Halsted Rail Alternative

The proposed Halsted Rail Alternative is a 5-mile extension of the existing Red Line. It would operate on an elevated structure running south from 95th Street along I-57 until Halsted Street. It would then turn south and continue along Halsted Street to the intersection of Halsted Street and Vermont Avenue near 127th Street. Four stations would be at 103rd Street, 111th Street, 119th Street, and Vermont Avenue.

5.6.1 Permanent Impacts and Mitigations - Halsted Rail Alternative

Figure 5-3 shows the Halsted Rail Alternative. The impact analysis was conducted for two segments within the Halsted Rail Alternative. Segments HA and HB are shown on Figure 5-3. Because the traffic analysis was conducted on a regional basis, the traffic discussion was not divided into segments.

5.6.1.1 Public Transportation

Currently the 95th Street Terminal is the southern terminus of the Red Line. Many of the existing bus routes within the project area terminate at this location. From this station, passengers continue to travel north on the Red Line or connect to a different bus route. With the expansion of the Red Line, some existing bus routes would be rerouted to feed into the proposed stations. Passengers would benefit from reduced travel times to connecting rail service, further south of the 95th Street Terminal. The transportation model indicates approximately 5,980 new riders for the Halsted Rail Alternative and total project weekday boardings of 35,300 (AECOM 2009).

The following describes changes to existing bus routes as a result of the Halsted Rail Alternative:

Segment HA

- CTA route #9 Ashland would terminate at the 103rd Street station, allowing passengers to continue to travel south of 104th Street where the existing route #9 currently terminates.
- CTA route #103 West 103rd and #106 East 103rd would be combined into one route operating between a west terminal at Pulaski Road and an east terminal at Stony Island Avenue. This change would reduce the number of bus routes that terminate at 95th Street while still providing service to the Red Line.
- The CTA route #108 Halsted/95th would be eliminated because the rail extension would replace this bus route.

- Routes #112 Vincennes/111th and #111 111th/King Drive would be reconstructed to simplify route paths and better serve the new alignment. Route #111 would operate on 111th Street between 111th Street/Pulaski Road and 111th Street/Corliss Avenue, serving the new 111th Street station. A new route #115 would operate as a two-directional loop on 115th Street, Cottage Grove Avenue, 95th Street, and Vincennes Avenue. Route #112 would be eliminated.
- Route# 119 Michigan Avenue/119th Street would terminate at the 119th Street station.

Segment HB

- Pace route #348 would terminate at the Vermont Avenue station.
- Pace route #352 Halsted would terminate at the Vermont Avenue station. Route #359 Robbins/South Kedzie would terminate at the 119th Street station instead of the 95th Street Terminal.

“User benefit” is a measure of travel time improvement for each person boarding the system. This measure indicates the overall reduction in travel time including travel to the station, wait time, transfer time, and on-transit time. For the Halsted Rail Alternative, the average user benefit per boarding passenger would be 14 minutes (AECOM 2009). With expansion of the Red Line, some existing bus routes would be rerouted to feed into the proposed stations. Passengers would benefit from reduced travel times to connecting rail service, further south of the 95th Street Terminal. Congestion at 95th Street Terminal would be reduced as fewer buses would be routed to the 95th Street Terminal for transfers to the Red Line. There would be no adverse impacts on public transportation from the Halsted Rail Alternative.

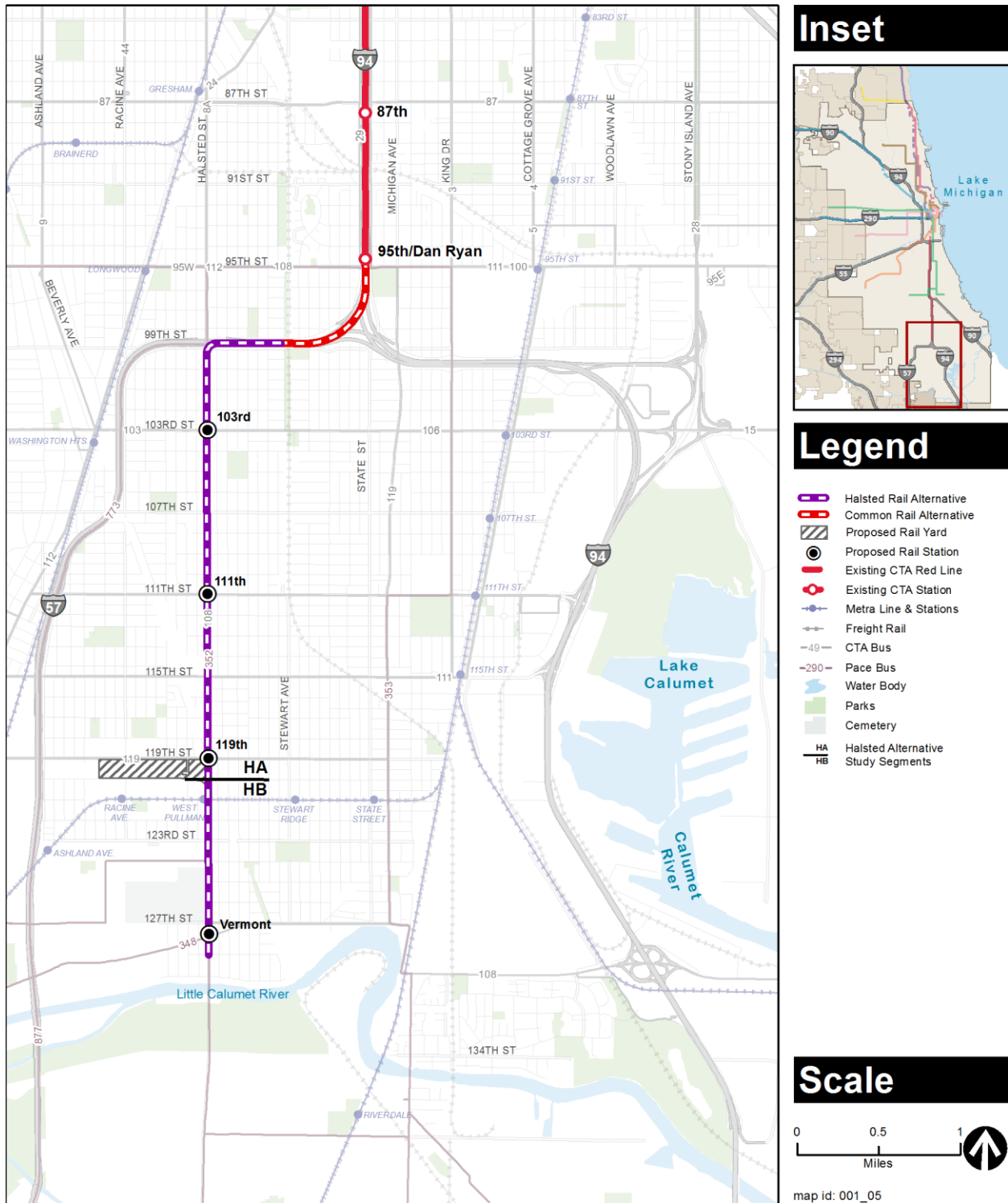


Figure 5-3: Halsted Rail Alternative

5.6.1.2 Traffic

Under Halsted Rail Alternative (2026) conditions, 75 percent of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-16. Appendix E contains the traffic data and Synchro results for the Halsted Rail Alternative. All increases in traffic volumes are related to vehicle access to park & ride facilities at stations. Under Halsted Rail Alternative (2026) conditions, 19 of the 76 study intersections would operate at an unacceptable LOS (LOS “E” or “F”) in either or both the AM and PM peak hours. Of those 19 intersections, 13 would operate at conditions worse than the No Build conditions. The intersections that operate at worse than the No Build conditions are shown in bold in Table 5-16 and are listed below:

- 103rd Street and Halsted Street - AM LOS = F; **PM LOS = E**
- 115th Street and Cottage Grove Avenue East - **AM LOS = F**
- 119th Street and Ashland Avenue - **AM LOS = E**; PM LOS = F
- 119th Street and Halsted Street - **PM LOS = E**
- 127th Street and Paulina Street - **PM LOS = E**
- 127th Street and Marshfield Avenue - **AM LOS = E**
- 127th Street and Ashland Avenue - **PM LOS = F**
- 127th Street and Halsted Street - **AM LOS = F**; **PM LOS = F**
- Vermont Avenue and Halsted Street - **AM LOS = F**; **PM LOS = F**
- 127th Street and Vermont Avenue and Wallace Street - **AM LOS = F**; **PM LOS = F**
- 127th Street and State Street - **PM LOS = F**
- 127th Street and Michigan Avenue - **PM LOS = F**
- 130th Street and Indiana Avenue - **PM LOS = F**

Under Halsted Rail Alternative (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-16. Under Halsted Rail Alternative (2030) conditions, there would be 22 intersections that would operate at LOS “E” or “F” in either or both the AM and PM peak hours. Of the 22 intersections, 15 would operate at worse than the No Build conditions. The 15 intersections that would operate at worse than the No Build conditions are shown in Table 5-16 in bold text and are listed below:

- 103rd Street and Halsted Street - AM LOS = F; **PM LOS = F**
- 111th Street and Cottage Grove Avenue - **PM LOS = E**

- 115th Street and Cottage Grove Avenue– **AM LOS = E**
- 115th Street and Cottage Grove Avenue East - **AM LOS = F**
- 119th Street and Ashland Avenue - **AM LOS = E; PM LOS = F**
- 119th Street and Halsted Street - **PM LOS = E**
- 127th Street and Paulina Street - **PM LOS = E**
- 127th Street and Marshfield Avenue - **AM LOS = F**
- 127th Street and Ashland Avenue - **PM LOS = F**
- 127th Street and Halsted Street - **AM LOS = F; PM LOS = F**
- Vermont Avenue and Halsted Street - **AM LOS = F; PM LOS = F**
- 127th Street and Vermont Avenue and Wallace Street - **AM LOS = F; PM LOS = F**
- 127th Street and State Street - **PM LOS = F**
- 127th Street and Michigan Avenue - **PM LOS = F**
- 130th Street and Indiana Avenue - **PM LOS = F**

Table 5-16: Halsted Rail Alternative (2026 and 2030) Intersection Level of Service

| ID | Intersection | Control Type | 2026 Halsted Rail Alternative | | 2030 Halsted Rail Alternative | |
|----|---|--------------|-------------------------------|------------------|-------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | C | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |

| ID | Intersection | Control Type | 2026 Halsted Rail Alternative | | 2030 Halsted Rail Alternative | |
|----|--|--------------|-------------------------------|------------------|-------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | E | F | F |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | C |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | A | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | C | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | B | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | A | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |

| ID | Intersection | Control Type | 2026 Halsted Rail Alternative | | 2030 Halsted Rail Alternative | |
|-----|--|--------------|-------------------------------|------------------|-------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | E |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | D | C |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | D | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | C | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | D | B | D |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | B |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | D | D | E | D |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | F | D | F | D |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | E | F | E | F |
| 60 | 119th Street and Halsted Street | Signalized | C | E | D | E |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | B | C | B | C |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A | A | A |
| 64 | 127th Street and Paulina Street | Signalized | C | E | C | E |
| 65 | 127th Street and Marshfield Avenue | Signalized | E | C | F | D |
| 66 | 127th Street and Ashland Avenue | Signalized | C | F | D | F |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |

| ID | Intersection | Control Type | 2026 Halsted Rail Alternative | | 2030 Halsted Rail Alternative | |
|----|--|--------------|-------------------------------|------------------|-------------------------------|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 68 | 127th Street and Halsted Street | Signalized | F | F | F | F |
| 69 | Vermont Avenue and Halsted Street | Signalized | F | F | F | F |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | F | F | F | F |
| 71 | 127th Street and State Street | Signalized | C | F | C | F |
| 72 | 127th Street and Michigan Avenue | Signalized | B | F | B | F |
| 73 | 130th Street and Indiana Avenue | Signalized | D | F | D | F |
| 74 | 130th Street and Ellis Avenue | Signalized | B | B | B | B |

Notes:

LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

Mitigation measures to reduce or minimize the impacts were evaluated for the transportation network surrounding the Halsted Rail Alternative. Mitigation measures for intersections near the affected intersection may also be necessary to provide better flow of traffic; therefore, the mitigation measures include the affected intersections as well as adjacent or nearby intersections. Table 5-17 lists the mitigation measures that would address impacts on the study intersections under Halsted Rail Alternative (2030) conditions:

Table 5-17: Mitigation Measures for the Halsted Rail Alternative (2030) Conditions

| ID | Intersection | Mitigation Measure |
|-----|--|--|
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | PM: Optimize cycle length/splits. |
| 16 | 103rd Street and Halsted Street | AM/PM: Optimize cycle length/splits. |
| 41 | 111th Street and Cottage Grove Avenue | PM: Optimize splits. |
| 55a | 115th Street and Cottage Grove Avenue | AM/PM: Increase cycle length, Optimize splits |
| 55b | 115th Street and Cottage Grove Avenue East | AM/PM: Increase cycle length, Optimize splits |
| 59 | 119th Street and Ashland Avenue | PM: Optimize splits. |
| 60 | 119th Street and Halsted Street | PM: Optimize splits |
| 64 | 127th Street and Paulina Street | AM: Decrease cycle length. Optimize splits. PM: Increase cycle length. Optimize splits. Add westbound turn lane take from eastbound turn lane in other direction. There does appear to be sufficient width on bridge to have double left turns in both directions. |
| 65 | 127th Street and Marshfield Avenue | AM: Decrease cycle length. Optimize splits. PM: Increase cycle length. Optimize splits. |

| ID | Intersection | Mitigation Measure |
|----|--|--|
| 66 | 127th Street and Ashland Avenue | AM: Decrease cycle length. Optimize splits. PM: Increase cycle length. Optimize splits. |
| 68 | 127th Street and Halsted Street | Add eastbound left turn lane. Add northbound left turn lane (remove parking). AM: Optimize cycle length. PM: Increase cycle length. Optimize splits. Actuate and coordinate signal. |
| 69 | Vermont Avenue and Halsted Street | Add eastbound right turn lane. Add westbound left turn lane. Add southbound right turn lane. Increase cycle length. Optimize splits. Actuate and coordinate signal. |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Add additional NE right turn lane. Change westbound through/left to dedicated westbound left turn lane. Restrict northeast bound to northbound movement. Actuate signal. Optimize cycle length/splits. |
| 71 | 127th Street and State Street | Add eastbound left turn lane. |
| 72 | 127th Street and Michigan Avenue | PM: Increase cycle length. Optimize splits. |
| 73 | 130th Street and Indiana Avenue | Add northbound right turn lane. PM: Increase cycle length. Optimize splits. |

Under Halsted Rail mitigated (2030) conditions, most of the study intersections within the API would operate at LOS “D” or better in both the AM and PM peak hours, as shown in Table 5-18. Under Halsted Rail mitigated (2030) conditions, some intersections would operate at “E” or “F;” however, these intersections would be no worse than No Build (2030) conditions. Mitigated conditions would not result in additional intersections with unacceptable LOS. As such, there would be no adverse permanent traffic impacts for this alternative. LOS D is considered to be acceptable for an urban area.

Table 5-18: Halsted Rail Alternative Mitigated (2030) Intersection Level of Service

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 Halsted Rail Alternative Mitigated | |
|----|---|--------------|---------------------------|------------------|---|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 1 | 95th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 2 | 95th Street and Lafayette Avenue | Signalized | D | D | D | D |
| 3 | 95th Street and State Street | Signalized | D | C | D | C |
| 4 | 95th Street and Michigan Avenue | Signalized | B | B | B | B |
| 5 | 98th Place and Halsted Street | Signalized | F | F | F | F |
| 6 | 99th Street and Halsted Street | Signalized | D | D | D | C |
| 7 | 98th Place and Wentworth Avenue | Signalized | B | B | B | B |
| 8 | 99th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 9 | 99th Street and State Street | Signalized | A | B | A | B |
| 10 | 99th Street and Michigan Avenue | Signalized | C | B | C | B |
| 11 | 99th Place and Martin Luther King Drive | Signalized | B | B | B | B |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 Halsted Rail Alternative Mitigated | |
|-----|--|--------------|---------------------------|------------------|---|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 12 | 100th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 13 | 100th Street and Cottage Grove Avenue | Unsignalized | A | C | A | C |
| 14 | 103rd Street and Vincennes Avenue and Beverly Avenue | Signalized | E | F | E | F |
| 15 | 103rd Street and Morgan Street | Signalized | B | B | B | B |
| 16 | 103rd Street and Halsted Street | Signalized | F | D | F | C |
| 17 | 103rd Street and Normal Avenue | Signalized | B | B | B | C |
| 18 | 103rd Street and Wentworth Avenue | Signalized | B | B | B | B |
| 19 | 103rd Street and State Street | Signalized | B | B | B | B |
| 20 | 103rd Street and Michigan Avenue | Signalized | B | B | B | B |
| 21 | 103rd Street and Martin Luther King Drive | Signalized | C | C | C | C |
| 22 | 103rd Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 23 | 103rd Street and Woodlawn Avenue | Signalized | A | A | A | A |
| 24 | 107th Street and Halsted Street | Signalized | F | C | F | C |
| 25 | 107th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 26 | 107th Street and State Street | Signalized | A | A | A | A |
| 27 | 107th Street and Michigan Avenue | Signalized | B | B | B | B |
| 28 | 107th Street and Martin Luther King Drive | Signalized | B | B | B | B |
| 29 | 107th Street and Cottage Grove Avenue | Signalized | B | B | B | B |
| 30 | 111th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 31 | 111th Street and Hamlet Avenue | Signalized | D | D | D | D |
| 32 | 112th Place and Marshfield Avenue | Signalized | B | C | C | C |
| 33 | 112th Place and Hamlet Avenue | Signalized | E | C | E | C |
| 34 | 111th Street and Halsted Street | Signalized | C | C | C | C |
| 35 | 111th Street and Normal Avenue | Signalized | B | A | B | B |
| 36 | 111th Street and Wentworth Avenue | Signalized | B | A | B | A |
| 37 | 111th Street and State Street | Signalized | A | B | B | B |
| 38 | 111th Street and Michigan Avenue | Signalized | B | B | B | B |
| 39 | 111th Street and Indiana Avenue | Signalized | B | B | B | B |
| 40 | 111th Street and Martin Luther King Drive | Signalized | B | A | B | A |
| 41 | 111th Street and Cottage Grove Avenue | Signalized | C | D | C | C |
| 42a | 111th Street and Langley Avenue | Signalized | B | C | B | C |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 Halsted Rail Alternative Mitigated | |
|-----|--|--------------|---------------------------|------------------|---|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 42b | 111th Street and Ellis Avenue | Signalized | C | C | D | D |
| 43 | 111th Street and Doty Avenue | Signalized | C | C | C | C |
| 44 | 111th Street and Bishop Ford eastbound Ramps | Unsignalized | E | C | E | C |
| 45 | 111th Street and Bishop Ford westbound Ramps | Unsignalized | E | B | E | C |
| 46 | 115th Street and Marshfield Avenue | Signalized | B | B | B | B |
| 47 | 115th Street and Ashland Avenue | Signalized | B | B | B | B |
| 48 | 115th Street and Racine Avenue | Signalized | B | C | B | C |
| 49 | 115th Street and Halsted Street | Signalized | C | C | C | C |
| 50 | 115th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 51 | 115th Street and State Street | Signalized | B | B | B | B |
| 52 | 115th Street and Michigan Avenue | Signalized | B | D | B | C |
| 53 | 115th Street and Indiana Avenue | Signalized | B | B | B | C |
| 54 | 115th Street and Martin Luther King Drive | Unsignalized | D | F | D | F |
| 55a | 115th Street and Cottage Grove Avenue | Signalized | D | C | B | D |
| 55b | 115th Street and Cottage Grove Avenue East | Signalized | E | C | C | B |
| 56 | 115th Street and Bishop Ford Freeway eastbound Ramps | Unsignalized | D | C | D | C |
| 57 | 115th Street and Bishop Ford Freeway westbound Ramps | Unsignalized | D | C | D | C |
| 58 | 119th Street and Marshfield Avenue | Signalized | D | D | D | D |
| 59 | 119th Street and Ashland Avenue | Signalized | D | F | D | F |
| 60 | 119th Street and Halsted Street | Signalized | C | C | C | D |
| 61 | 119th Street and Wentworth Avenue | Signalized | B | B | B | B |
| 62 | 119th Street and State Street | Signalized | B | B | C | B |
| 63 | 119th Street and Michigan Avenue | Signalized | A | A | C | B |
| 64 | 127th Street and Paulina Street | Signalized | C | C | C | C |
| 65 | 127th Street and Marshfield Avenue | Signalized | C | C | C | C |
| 66 | 127th Street and Ashland Avenue | Signalized | C | C | C | C |
| 67 | Ashland Avenue and Vermont Avenue | Signalized | C | C | C | C |
| 68 | 127th Street and Halsted Street | Signalized | C | C | C | D |
| 69 | Vermont Avenue and Halsted Street | Signalized | B | B | B | B |
| 70 | 127th Street and Vermont Avenue and Wallace Street | Signalized | D | D | C | D |
| 71 | 127th Street and State Street | Signalized | B | B | B | C |
| 72 | 127th Street and Michigan Avenue | Signalized | A | B | B | C |

| ID | Intersection | Control Type | 2030 No Build Alternative | | 2030 Halsted Rail Alternative Mitigated | |
|----|---------------------------------|--------------|---------------------------|------------------|---|------------------|
| | | | AM Peak-Hour LOS | PM Peak-Hour LOS | AM Peak-Hour LOS | PM Peak-Hour LOS |
| 73 | 130th Street and Indiana Avenue | Signalized | C | C | D | D |
| 74 | 130th Street and Ellis Avenue | Signalized | A | A | B | B |

Notes:

LOS = level of service

Signalized intersection LOS reported as the average for all movements. Unsignalized LOS reported is the LOS of the worst movement. LOS "E" and "F" are shown in bold.

5.6.1.3 Freight Transportation

Rail

The Halsted Rail Alternative alignment crosses over the UPRR at Fernwood Parkway and I-57. Because this would be an aerial structure, there would be no permanent impact on UPRR freight operations.

Truck

Because the rail line would be elevated, there would be no impacts on freight truck traffic on Halsted Street. The minimum clearance between the aerial structure and the roadway is 14 feet 9 inches, the minimum clearance required for local roadways.

5.6.1.4 Bicycle Facilities

The existing off-street bike trail, Major Taylor Trail, runs north/south from 83rd Street to the Cal-Sag Channel. The trail is divided by Halsted Street at 119th Street. Currently, the portion of the trail west of Halsted Street ends at the existing sidewalk north of the 119th Street and Halsted Street intersection. Bike riders must use approximately 170 feet of existing sidewalk along the west side of Halsted Street to access the intersection of 119th Street and Halsted Street. The existing crosswalks are used to cross to the continuation of the bike trail east of Halsted Street near the southeast corner of the intersection. Because the Halsted Rail Alternative would use an elevated structure, the existing trail would not be permanently affected by the operation of the station. Careful attention to the entrance location and location of the stair/escalator would be made to ensure that there would be no disconnect created in the existing bike route. Enough space would be provided to avoid a conflict with bicycle and pedestrian traffic.

Due to the close proximity of the existing off-street bike trail and Halsted Street, bicyclists would easily be able to access the Red Line. Bicyclists would have the option to park & ride or to bring their bicycles on the trains. Bicyclists are currently restricted from bringing bicycles onto trains during weekday rush periods, which would increase the need for bicycle parking at stations for weekday work commuters.

5.6.1.5 Pedestrians

The Halsted Rail Alternative would provide pedestrians with more choices, flexibility and potentially reduced travel times as compared to No Build. Implementing the Halsted Rail Alternative would result in beneficial impacts at stations by upgrading intersections with ADA-compliant curb ramps and replacing deteriorated sidewalks. These improvements would provide access for all users and increase pedestrian safety.

Segment HA

103rd Street Station

The curb ramps and sidewalks would be improved with the construction of the proposed surface lots and aerial structure. Entrances to the station would be near the surface parking lot, allowing for a direct route from the platform to the parking lot. The entrance to the parking lot would be on the north side of 103rd Street and west of the proposed station, allowing cars to leave the parking lot farther away from the station, where the majority of pedestrian traffic would occur. All of these improvements would contribute to convenient, safe, and secure access for all users.

111th Street Station

The curb ramps and sidewalks would be improved with the construction of the proposed surface lots and aerial structure. The surface parking lot would be west of the station, allowing for a direct route from the platform to the parking lot. The parking lot entrances would be located on 111th Street and Green Street, a safe distance from the majority of pedestrian traffic. All of these improvements would contribute to convenient, safe, and secure access for all users.

119th Street Station

The curb ramps and sidewalks would be improved with the construction of the proposed surface lots and aerial structure. The surface parking lot would be at the southwest corner of the intersection, which is south of the station. Access to the station would require the crossing of 119th Street and/or Halsted Street. Because the intersection is signalized and has marked cross walks, pedestrians would have a safe route between the parking lot and the platform. The parking lot entrances would be located at 119th Street and Green Street, a safe distance from the majority of pedestrian traffic. All of these improvements would contribute to convenient, safe, and secure access for all users.

Segment HB

Vermont Avenue Station

The curb ramps (including the intersections of Halsted Street with 128th Street and with Vermont Avenue) and sidewalks would be improved with the construction of the aerial structure, the Vermont Avenue station, the proposed surface lot to the east of Halsted Street, and the parking structure to the west of Halsted Street. Bus bays for connecting CTA and Pace buses would be included at the station. These improvements would contribute to convenient, safe, and secure access for all users.

5.6.1.6 Parking

Each of the station locations would have surface parking lots and/or parking garages. These parking facilities would expand the reach of the RLE and provide an opportunity for commuters to access the station by car. These users may benefit from reduced travel time and reduced travel cost by riding the Red Line. Another benefit would be that motorists could be diverted from congested sections of roadway. Sufficient parking capacity would be provided in all locations to avoid spillover parking into the residential areas near the station locations. Table 5-19 presents a summary of the proposed parking for each of the stations.

Segment HA

Table 5-19: Halsted Rail Alternative Park & Ride Facilities Segment UA

| Station | Parking Type | Capacity | Location | Description |
|--------------|--------------|----------|--|---|
| 103rd Street | Surface lot | 200 | North of 103rd Street west of proposed station | Bus turnaround East of proposed station and north of 103rd for route #9. No parking provided. |
| 111th Street | Surface lot | 200 | North of 111th Street west of proposed station | Bus turnaround within the lot for route #352 |
| 119th Street | Surface lot | 1,000 | South of 119th Street west of proposed station | Bus turnaround within the lot for route #359 |

Segment HB

The park & ride facility at Vermont Avenue station would be near the I-57 Expressway and 127th Street interchange. It would be just over 3 miles from the I-94 Bishop Ford Freeway and 130th Street interchange. This facility would expand the reach of the RLE to the south suburban and northwest Indiana automobile commuters. These commuters could benefit from decreases in travel times and cost by riding the Red Line and avoiding congestion and travel delays on the Dan Ryan Expressway and I-57 Expressway. Table 5-20 presents a summary of the parking for the Vermont Avenue station.

Table 5-20: Halsted Rail Alternative Park & Ride Facilities Segment UB

| Station | Parking Type | Capacity | Location | Description |
|----------------|------------------------|----------|--------------------------|---|
| Vermont Avenue | 7 Story Parking Garage | 2,000 | West of proposed station | Parking garage with ground level available for retail and/or community facilities. Bus bays located on Halsted for route #8A, #348 and #352 |

On-street parking is provided all along Halsted Street with parking restrictions at locations of bus stops, fire hydrants, and driveway entrances. On-street parking is allowed from I-57 to 129th Street. Permits are not required for on-street parking. The straddle bent beam column locations would decrease the number of on-street parking spots on Halsted Street. Bump-outs in the

concrete sidewalk would provide protection to the columns and allow for parking in the current parking lane between column spans. The adverse impact on on-street parking would be minimal.

The mitigation measure to expand the left-turn lane for the intersection of 127th Street and Halsted Street may require the removal of on-street parking to accommodate the left turn and shift the intersection back to a typical alignment. The removal of these spaces would not be adverse. Parking is available on adjacent streets (and at the Vermont Avenue parking garage). The frequency of driveways near this intersection limits the parking availability and current use of the street for parking.

5.6.2 Construction Impacts and Mitigations - Halsted Rail Alternative

5.6.2.1 Public Transportation

The construction activities associated with the Halsted Rail Alternative would temporarily affect the physical capacity of roadways and intersections requiring detours. Superstructure erection would require temporary shutdown of all traffic on Halsted Street. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for bus transit users. Bus stop locations may be eliminated or relocated temporarily and buses rerouted during construction activities. Bus stops for routes along Halsted Street (#8A, #108, and Pace #352) will have changes in stops as construction work progresses along the corridor. Bus stops for routes intersecting with Halsted Street (#103, #111, #115, #119, and Pace #348) will have changes only when construction activities are in the vicinity of the applicable intersection. With adherence to local, state, and federal construction and temporary traffic and public transportation management guidelines, no adverse construction impacts would result from the Halsted Rail Alternative.

The ME Blue Island line crosses Halsted Street between 120th Street and 122nd Street. The West Pullman Station is west of Halsted Street. Construction of the aerial structure would require temporary scheduled track closures. Construction would be phased to minimize impacts on Metra operations.

5.6.2.2 Traffic

The construction activities associated with this alternative would temporarily affect the physical capacity of local roadways and intersections. This may lead to increased travel times, possible shift in traffic volumes, and the need to reroute traffic patterns during construction.

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-94.

Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Proposed structure construction

would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase travel times along this portion of I-57.

The construction activities associated with the Halsted Rail Alternative would temporarily affect the physical capacity of roadways and intersections. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for traffic using Halsted Street. Steel beam placement transverse to Halsted Street or across intersections would require temporary shutdown of all traffic on Halsted Street and/or the intersecting street. Beam placement is typically done during late night hours to minimize traffic impacts. Temporary traffic stoppage usually occurs in 15-minute intervals as beams are lifted off trucks and secured in position. Marked alternate routes would likely include Vincennes Road on the west and Wentworth Avenue on the east, although local drivers will likely use nearby streets. With adherence to local, state, and federal construction and temporary traffic management guidelines, no adverse traffic impacts would result from the Halsted Rail Alternative.

5.6.2.3 Freight Transportation

Rail

There would be no construction impacts on rail freight transportation, because no freight train tracks are near or cross the Halsted Rail Alternative alignment.

Truck

Work within the median of I-94 would require temporary lane closures. Proposed structure construction would be sequenced to minimally affect traffic flow on I-94. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-94.

The Halsted Rail Alternative alignment crosses over the UPRR at Fernwood Parkway and I-57. Dual-track, elevated structures would be constructed through the I-94/I-57 interchange, across the westbound I-57 entrance ramp from northbound I-94, and within the I-57 corridor. For superstructure erection over expressway traffic lanes, intermittent, temporary shutdown of all traffic would be required at nighttime, per IDOT approval. Proposed structure construction would be sequenced to minimally affect traffic flow on I-57. Increased traffic congestion due to construction activities may temporarily increase freight truck travel times for shipping routes that include this portion of I-57.

The construction activities associated with the Halsted Rail Alternative would temporarily affect the physical capacity of roadways and intersections requiring detours. Superstructure erection would require temporary shutdown of all traffic on Halsted Street. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for freight trucks using Halsted Street.

5.6.2.4 Bicycle

Portions of the Major Taylor Trail would need to be closed temporarily during the construction of the 119th Street station and the aerial structure. Bicycle travel times may increase due to detours or shifting of routes.

5.6.2.5 Pedestrian

Due to the construction of the aerial structure and stations sidewalks would need to be temporarily closed. Increased travel distance and time may be incurred due to pedestrian traffic reroutes.

5.6.2.6 Parking

On-street parking would be temporarily affected during construction of the aerial structure and stations. Parking would potentially be eliminated from Halsted Street during construction to increase traffic flow. Construction of park & ride lots would also contribute to temporary on-street parking loss due to maintenance of traffic during construction activities.

5.6.3 Cumulative Impacts and Mitigations - Halsted Rail Alternative

There would be no adverse cumulative impacts for the Halsted Rail Alternative.

5.6.4 119th Street Yard and Shop

The 119th Street yard and shop would be located south of the 119th Street station and north of Vermont Avenue station to the west of Halsted Street. The parcel on which the yard and shop would be constructed is west of the park & ride facility location at the 119th Street station. Track height would transition from elevated at station height to at-grade between Halsted Street and Morgan Street, through the proposed park & ride facility. The yard would be entirely at grade.

5.6.4.1 Permanent Impacts and Mitigations

Under the Halsted Rail Alternative there would be no adverse permanent impacts on bicycle or pedestrian access. Pedestrian access by the general public would be restricted and discouraged. Existing sidewalks within the ROW of 119th Street, 120th Street, and Peoria Street would remain. Because of the location of the yard no public transportation would be affected. Existing on-street parking on Peoria Street would not be affected. Some parking would be provided for yard employees.

5.6.4.2 Construction Impacts and Mitigations

The construction activities associated with the 119th Street yard and shop would temporarily affect the physical capacity of roadways and intersections requiring detours at 120th Street and Halsted Street. Superstructure erection would require temporary shutdown of all traffic on Halsted Street. This may lead to increased travel times and possible shift in traffic volumes, increasing travel times for bus transit users. Bus stop locations may be eliminated or relocated temporarily and buses rerouted during construction activities. Lane closure on 119th Street and 120th Street may occur due to maintenance of traffic activities during construction. With adherence to local, state, and federal construction and temporary traffic and public transportation

management guidelines, no adverse construction impacts would result from the Halsted Rail Alternative.

Section 6

Impacts Remaining After Mitigation

Impacts can be adverse or beneficial. In the category of transportation, as summarized for each alternative below, there would be no adverse impacts after mitigation. The project will provide transportation benefits by improving travel times and transit access. Existing average travel times to work are higher in the RLE API than many other parts of Chicago. Within the API, some sections (particularly along 130th Street) are somewhat isolated from transit access. Benefits which directly address needs within the API are summarized below for each alternative.

6.1 No Build Alternative

There would be no impacts for the No Build Alternative.

6.2 Bus Rapid Transit Alternative

After mitigation, there would be no adverse impacts on transportation facilities.

Benefits of the BRT Alternative include:

- more frequent service throughout the day along the BRT alignment (4 minutes versus existing 12 minutes);
- approximately 3 minutes faster travel time from 130th Street to the 95th Street Terminal compared to existing bus service; and
- routing of service along and south of 130th Street to areas currently isolated from transportation connectivity.

6.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

Benefits applicable to all options for the UPRR Alternative include:

- an average “user benefit” (a measure of the combined time savings of travel time to stations, wait time at stations, transfer time, and on-transit time) of 12 minutes per boarding; and
- direct rail service (without requiring one or more bus transfers) from 130th Street, an area currently isolated from transportation connectivity.

6.3.1 Segment UA

After mitigation, there would be no adverse impacts on transportation facilities.

6.3.2 Segment UB

After mitigation, there would be no adverse impacts on transportation facilities.

6.3.3 120th Street Yard and Shop

There would be no impacts on transportation facilities from the 120th Street yard and shop.

6.4 Union Pacific Railroad Rail Alternative - East Option

6.4.1 Segment UA

After mitigation, there would be no adverse impacts on transportation facilities.

6.4.2 Segment UB

After mitigation, there would be no adverse impacts on transportation facilities.

6.4.3 120th Street Yard and Shop

There would be no impacts on transportation facilities from the 120th Street yard and shop

6.5 Union Pacific Railroad Rail Alternative - West Option

6.5.1 Segment UA

After mitigation, there would be no adverse impacts on transportation facilities.

6.5.2 Segment UB

After mitigation, there would be no adverse impacts on transportation facilities.

6.5.3 120th Street Yard and Shop

There would be no impacts on transportation facilities.

6.6 Halsted Rail Alternative

Benefits for the Halsted Rail Alternative include:

- an average “user benefit” of 14 minutes per boarding (which is a savings in travel time to stations, wait time, transfer time, and on-transit time); and
- direct rail service from the area surrounding Halsted Street. (Note that the area surrounding Halsted Street and Vermont Avenue currently has among the longest travel times to work in Chicago, ranging from 45 to 60 minutes.)

6.6.1 Segment HA

After mitigation, there would be no adverse impacts on transportation facilities.

6.6.2 Segment HB

After mitigation, there would be no adverse impacts on transportation facilities.

6.6.3 119th Street Yard and Shop

There would be no impacts on transportation facilities.

Section 7

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Appendix A

Existing Conditions

Red Line Extension Traffic Methodology

Existing Volumes

Intersection turning movement volumes were taken from two sources, existing counts from other studies and new counts conducted for this study. Adjustments were made when appropriate to match existing count volumes to volumes gathered from new counts. For locations with adjacent signalized intersections, such as frontage road intersection pairs along the interstates, counts were balanced to reflect more accurate traffic flow patterns.

Peak hour time periods used in this analysis are between 7:30 and 8:30 A.M. and 5:00 and 6:00 P.M. Peak hour factors for each individual intersection were used based on the existing 15-minute peak volume distributions.

There were several minor intersections where turning movement counts were not conducted. Turning movement volumes were estimated using adjacent intersection volume counts as approach and departure volumes and then applying a simple distribution assumption to generate turning movement volumes.

2026 and 2030 Base Volumes

Growth rates for 2030 traffic volumes were calculated from CMAP regional AM and PM peak models for existing, 2030 without-project, and 2030 with-project. To account for growth in the traffic between existing and future scenarios, existing intersection turning movement volumes for each intersection approach were adjusted based on the proportional change of volume between the corresponding CMAP model links. For intersection approaches without corresponding CMAP model links, the proportional change for these approaches was taken from the approaches at the same intersection that did have corresponding CMAP links. A floor of 1.0 and a ceiling of 1.3 were applied to the proportional changes. To estimate 2026 volumes, a simple linear growth rate from existing to 2030 base volumes was assumed.

2026 and 2030 With-Project Volumes

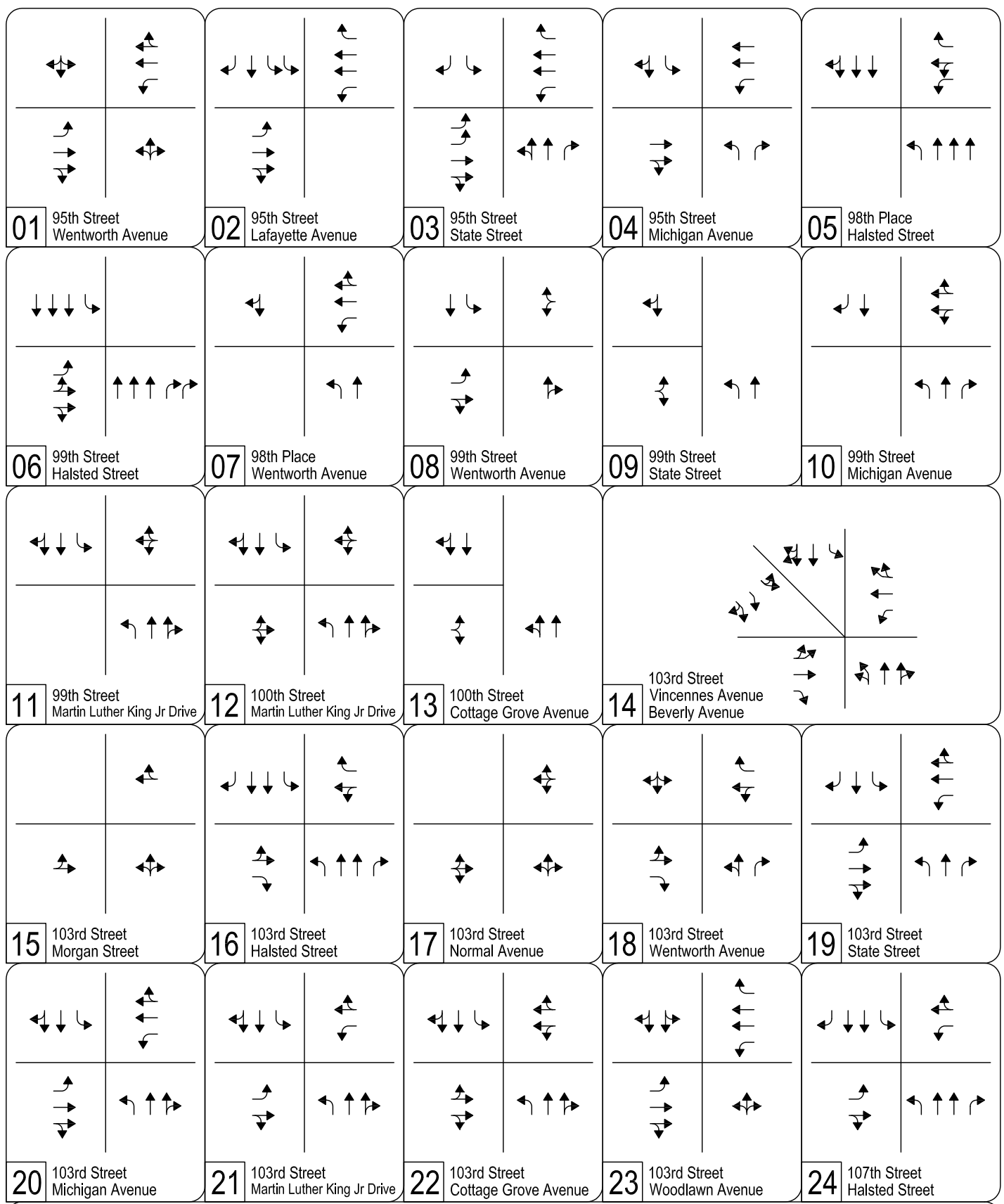
Trip generation rates from the ITE Trip Generation Manual are used to estimate the number of AM and PM peak traffic entering and exiting the park and ride locations for each project scenario based on the number of parking spaces that are to be constructed for the corresponding year of analysis. The project trips are then distributed across the transportation network based on an assumed distribution pattern.

The project traffic was added to the 2026 and 2030 base volumes to get the 2026 and 2030 with-project traffic for each project scenario.

Future peak hour factors (PHF) of 0.9 were used for all intersections with existing PHFs of 0.9 or less. A PHF of 0.95 was used for all intersections with existing PHFs of 0.9 to 0.95. If the existing peak hour factor was greater than 0.95, then the existing PHF was used as the future PHF.

Synchro Analysis and Mitigation

An analysis of each year and each project scenario was performed using Synchro 7. The results of the Synchro analysis were used to determine which intersections were impacted by each project scenario. Potential mitigation for impacted intersections included signal modifications, such as optimization or actuation; additional lanes or lane configuration modifications within existing pavement; and as a last resort, adding turn lanes that would require pavement widening.

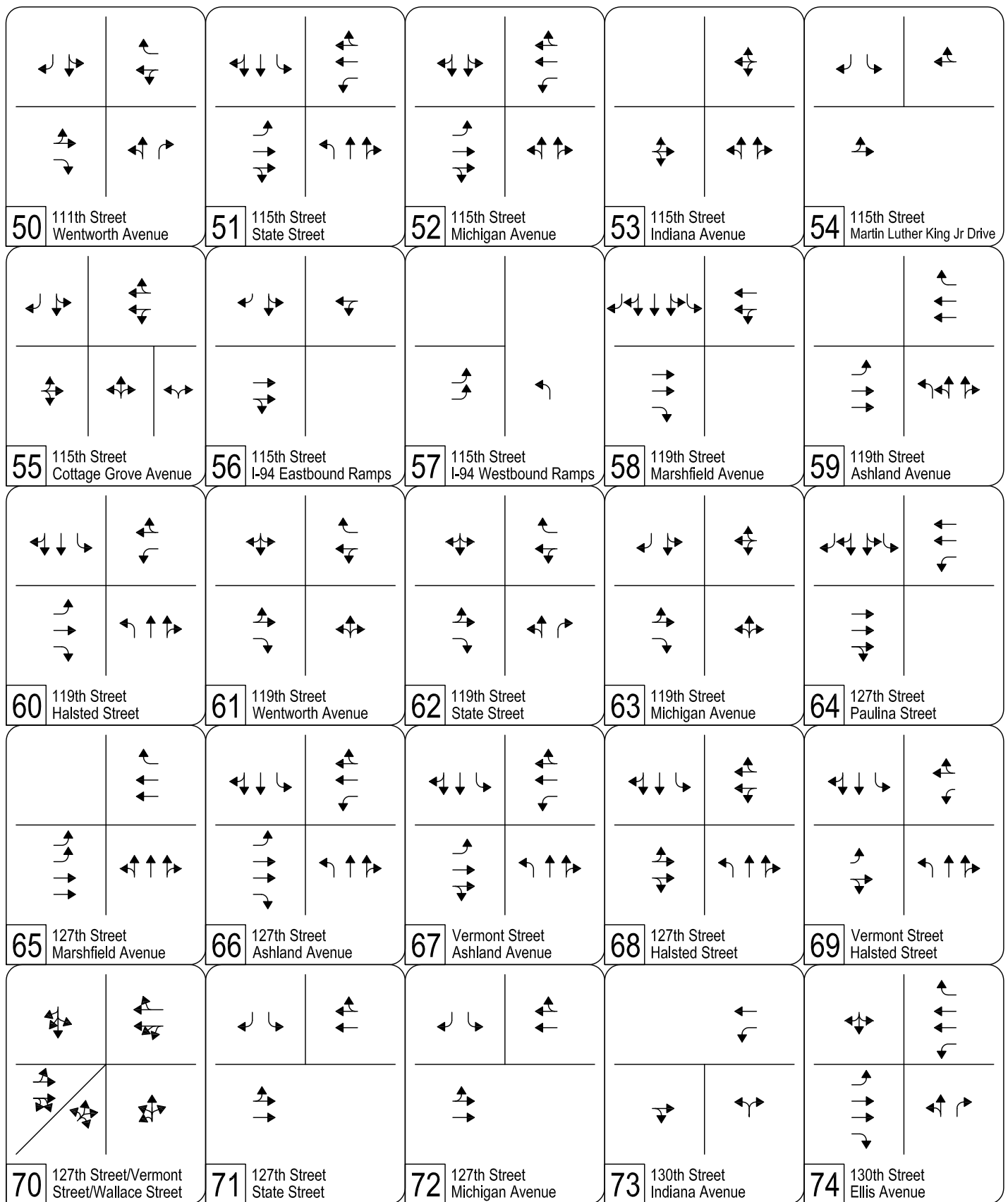


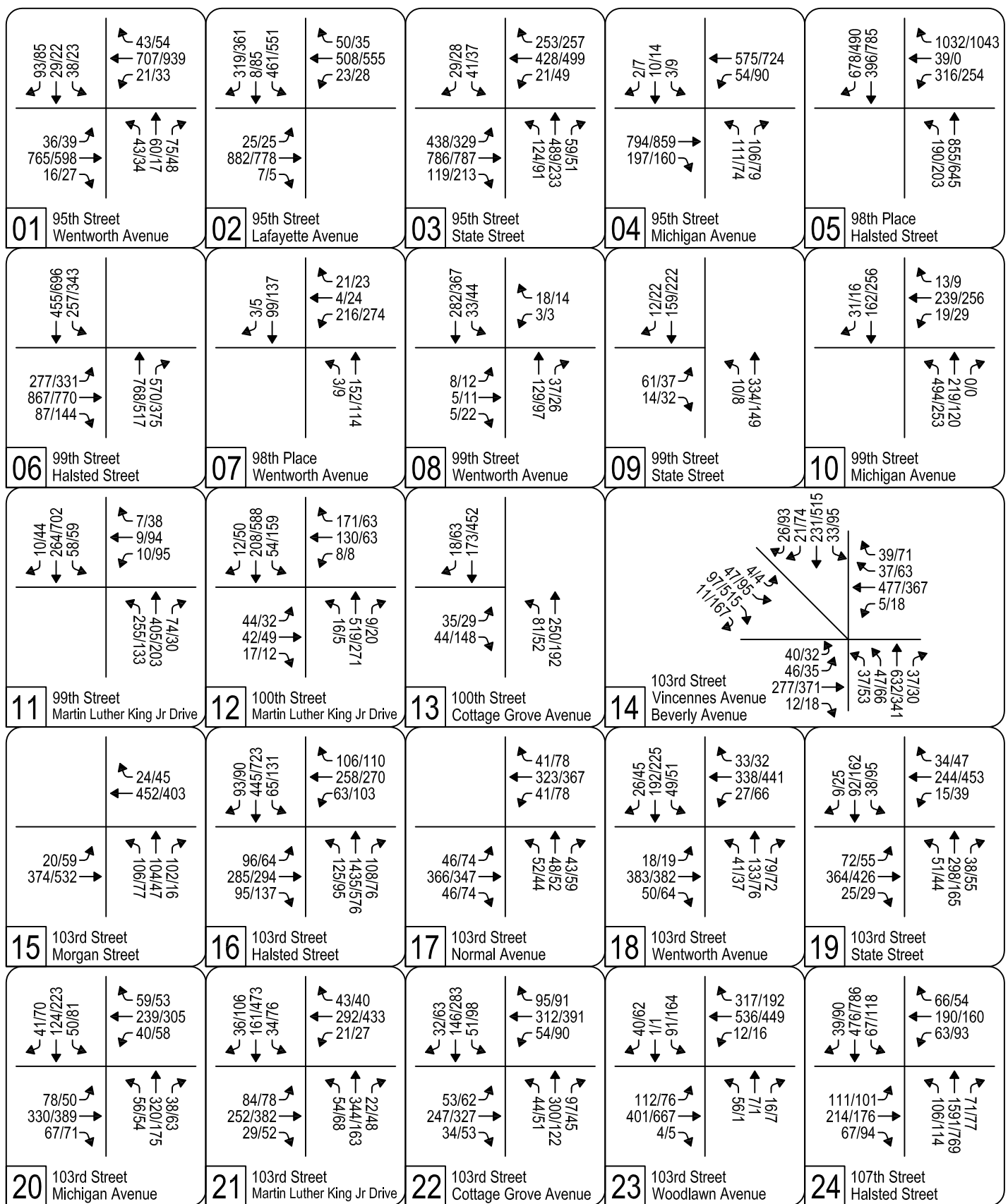
Existing (2012) Intersection Lane Geometry
Page 1 of 3

| | | | | |
|---|--|--|---|--|
| | | | | |
| 25 107th Street Wentworth Avenue | 26 107th Street State Street | 27 107th Street Michigan Avenue | 28 107th Street Martin Luther King Jr Drive | 29 107th Street Cottage Grove Avenue |
| | | | | |
| 30 111th Street Marshfield Avenue | 31 111th Street Hamlet Avenue | 32 112th Place Marshfield Avenue | 33 112th Place Hamlet Avenue | 34 111th Street Halsted Street |
| | | | | |
| 35 111th Street Normal Avenue | 36 111th Street Wentworth Avenue | 37 111th Street State Street | 38 111th Street Michigan Avenue | 39 111th Street Indiana Avenue |
| | | | | |
| 40 111th Street Martin Luther King Jr Drive | 41 111th Street Cottage Grove Avenue | 42 111th Street Ellis Avenue | 43 111th Street Doty Road | 44 111th Street I-94 Eastbound Ramps |
| | | | | |
| 45 111th Street I-94 Westbound Ramps | 46 115th Street Marshfield Avenue | 47 115th Street Ashland Avenue | 48 115th Street Racine Road | 49 115th Street Halsted Street |

Existing (2012) Intersection Lane Geometry

Page 2 of 3

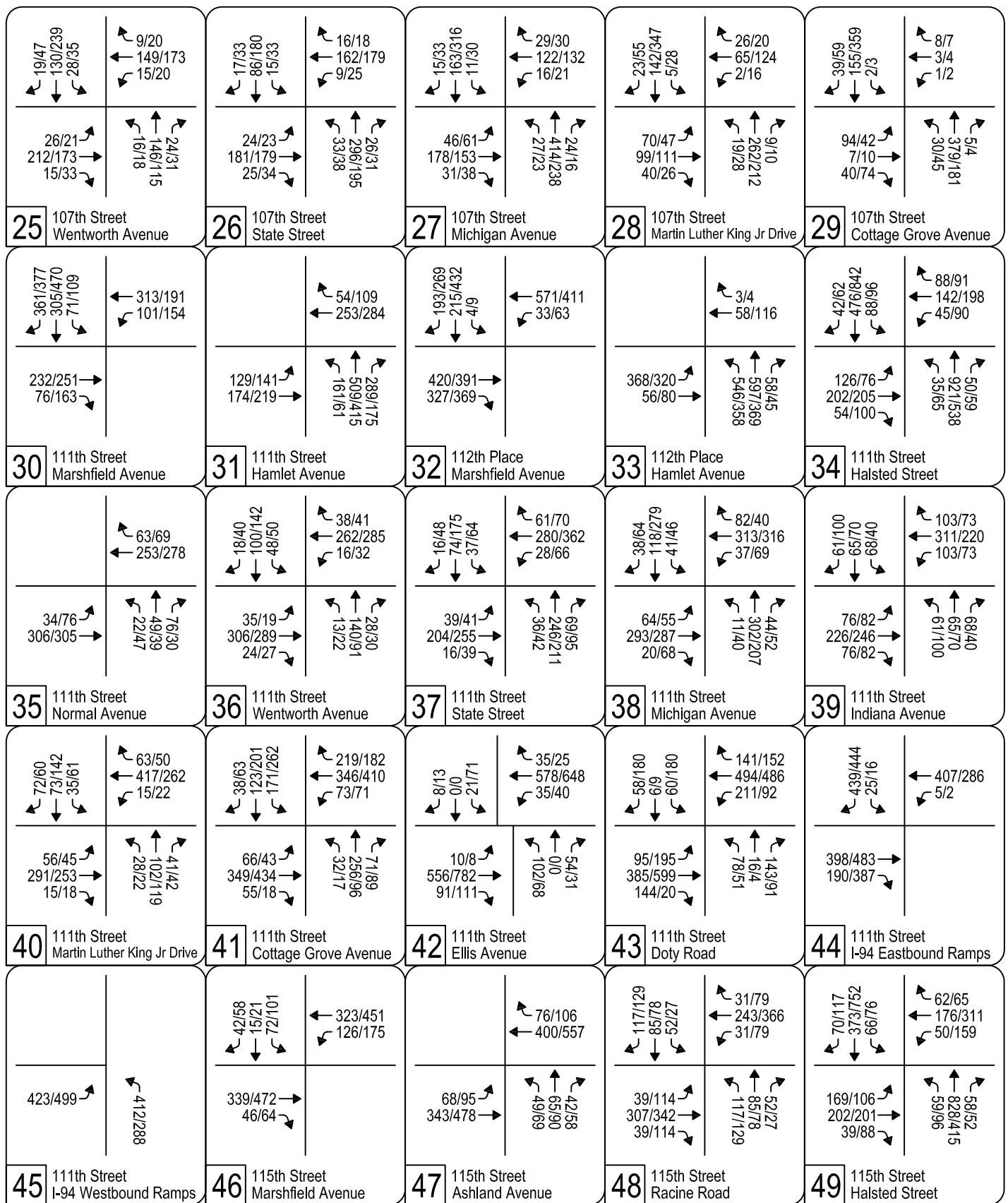




Existing (2012) Intersection Traffic Volumes

Page 1 of 3

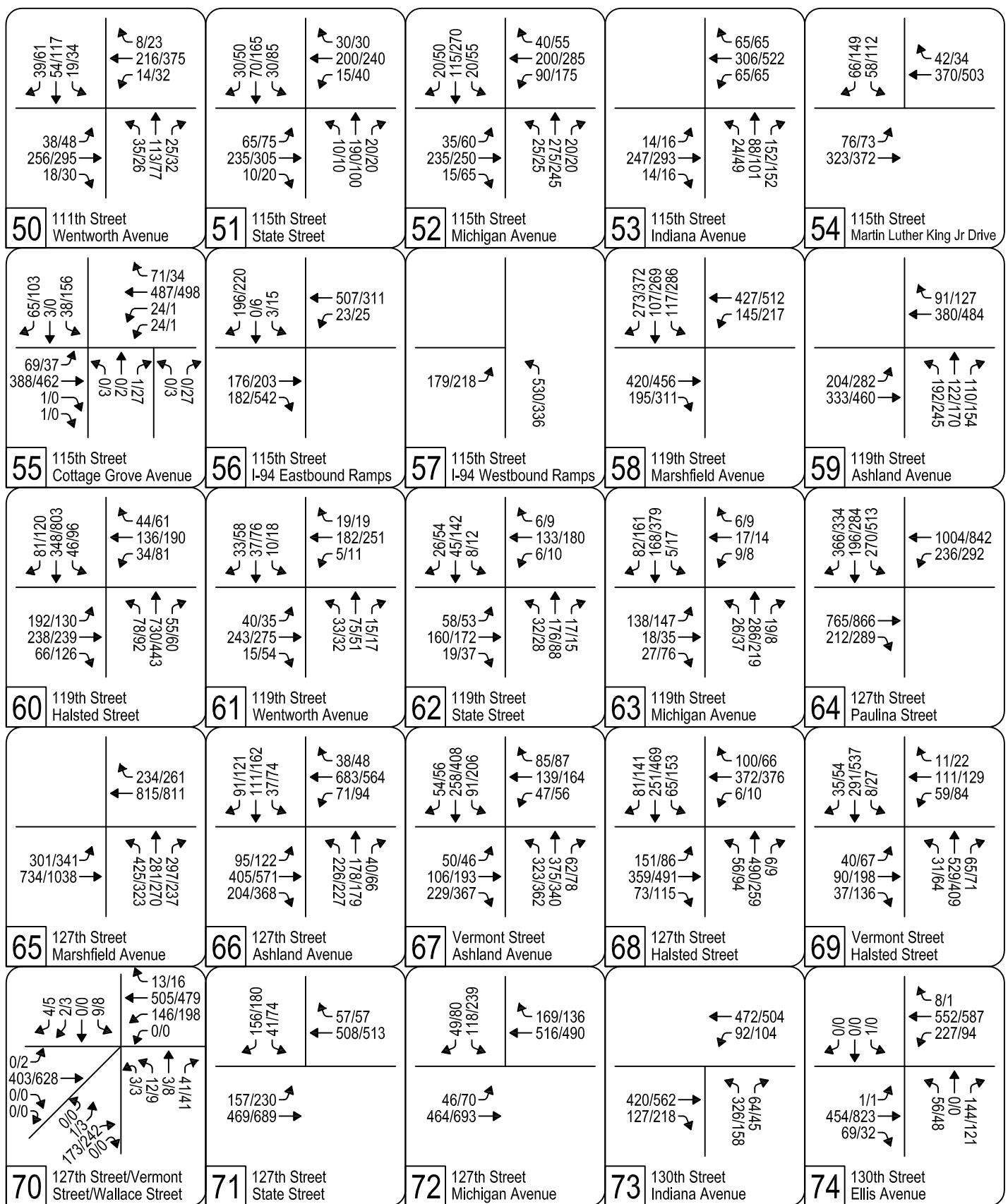
Legend: AM/PM Peak Hour Volumes



Existing (2012) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



Existing (2012) Intersection Traffic Volumes

Page 3 of 3

Legend: AM/PM Peak Hour Volumes

Fish Transportation Group
801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Halsted & 99th Street
Combined (All Vechiles + Peds)

File Name : Halsted & 99th St
Site Code : 00002423
Start Date : 9/23/2008
Page No : 1

| Groups Printed- Cars - Heavy - Semi | | | | | | | | | | | | | | | | | |
|-------------------------------------|----------------------------|------|-------|------|-------------------------------|------|-------|------|----------------------------|------|-------|------|-------------------------------|------|-------|------|------------|
| | Halsted From North (SB) | | | | 99th Street From East (WB) | | | | Halsted From South (NB) | | | | 99th Street From West (EB) | | | | |
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 07:00 AM | 78 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 190 | 106 | 5 | 78 | 258 | 6 | 0 | 805 |
| 07:15 AM | 105 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 219 | 138 | 1 | 81 | 244 | 4 | 1 | 879 |
| 07:30 AM | 93 | 118 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 194 | 150 | 11 | 71 | 205 | 9 | 1 | 853 |
| 07:45 AM | 62 | 143 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 243 | 155 | 0 | 70 | 212 | 16 | 2 | 904 |
| Total | 338 | 431 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 846 | 549 | 17 | 300 | 919 | 35 | 4 | 3441 |
| 08:00 AM | 97 | 150 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 156 | 135 | 2 | 68 | 258 | 19 | 0 | 887 |
| 08:15 AM | 68 | 156 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 211 | 130 | 1 | 81 | 192 | 43 | 1 | 886 |
| 08:30 AM | 76 | 138 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 173 | 142 | 21 | 81 | 191 | 26 | 0 | 849 |
| 08:45 AM | 68 | 160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137 | 90 | 0 | 96 | 215 | 18 | 0 | 784 |
| Total | 309 | 604 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 677 | 497 | 24 | 326 | 856 | 106 | 1 | 3406 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 04:00 PM | 64 | 112 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 150 | 98 | 1 | 62 | 160 | 32 | 5 | 687 |
| 04:15 PM | 78 | 132 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 114 | 64 | 0 | 86 | 226 | 32 | 1 | 736 |
| 04:30 PM | 69 | 171 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 161 | 104 | 2 | 103 | 210 | 27 | 2 | 853 |
| 04:45 PM | 79 | 135 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 85 | 76 | 0 | 53 | 183 | 26 | 0 | 640 |
| Total | 290 | 550 | 0 | 12 | 0 | 0 | 0 | 1 | 0 | 510 | 342 | 3 | 304 | 779 | 117 | 8 | 2916 |
| 05:00 PM | 80 | 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 147 | 97 | 0 | 83 | 177 | 27 | 1 | 762 |
| 05:15 PM | 54 | 140 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 138 | 99 | 0 | 93 | 208 | 42 | 2 | 779 |
| 05:30 PM | 84 | 159 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 129 | 79 | 1 | 108 | 202 | 46 | 1 | 812 |
| 05:45 PM | 96 | 189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 159 | 100 | 0 | 82 | 183 | 29 | 2 | 840 |
| Total | 314 | 638 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 573 | 375 | 1 | 366 | 770 | 144 | 6 | 3193 |
| 06:00 PM | 80 | 186 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 128 | 96 | 0 | 62 | 185 | 31 | 4 | 773 |
| 06:15 PM | 73 | 161 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 121 | 104 | 0 | 88 | 163 | 31 | 1 | 744 |
| 06:30 PM | 86 | 128 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 115 | 86 | 2 | 79 | 159 | 22 | 1 | 681 |
| 06:45 PM | 88 | 140 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 125 | 100 | 2 | 81 | 195 | 30 | 4 | 767 |
| Total | 327 | 615 | 0 | 3 | 0 | 0 | 0 | 5 | 0 | 489 | 386 | 4 | 310 | 702 | 114 | 10 | 2965 |
| Grand Total | 1578 | 2838 | 0 | 25 | 0 | 0 | 0 | 10 | 0 | 3095 | 2149 | 49 | 1606 | 4026 | 516 | 29 | 15921 |
| Apprch % | 35.5 | 63.9 | 0 | 0.6 | 0 | 0 | 0 | 100 | 0 | 58.5 | 40.6 | 0.9 | 26 | 65.2 | 8.4 | 0.5 | |
| Total % | 9.9 | 17.8 | 0 | 0.2 | 0 | 0 | 0 | 0.1 | 0 | 19.4 | 13.5 | 0.3 | 10.1 | 25.3 | 3.2 | 0.2 | |
| Cars | 1463 | 2676 | 0 | 21 | 0 | 0 | 0 | 8 | 0 | 2943 | 2068 | 49 | 1505 | 3993 | 511 | 29 | 15266 |
| % Cars | 92.7 | 94.3 | 0 | 84 | 0 | 0 | 0 | 80 | 0 | 95.1 | 96.2 | 100 | 93.7 | 99.2 | 99 | 100 | 95.9 |
| Heavy | 95 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 113 | 65 | 0 | 81 | 6 | 3 | 0 | 460 |
| % Heavy | 6 | 3.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.7 | 3 | 0 | 5 | 0.1 | 0.6 | 0 | 2.9 |
| Semi | 20 | 65 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 39 | 16 | 0 | 20 | 27 | 2 | 0 | 195 |
| % Semi | 1.3 | 2.3 | 0 | 16 | 0 | 0 | 0 | 20 | 0 | 1.3 | 0.7 | 0 | 1.2 | 0.7 | 0.4 | 0 | 1.2 |

Fish Transportation Group

801 South Blvd Suite 5

Oak Park, IL 60302

Chicago

Halsted & 99th Street

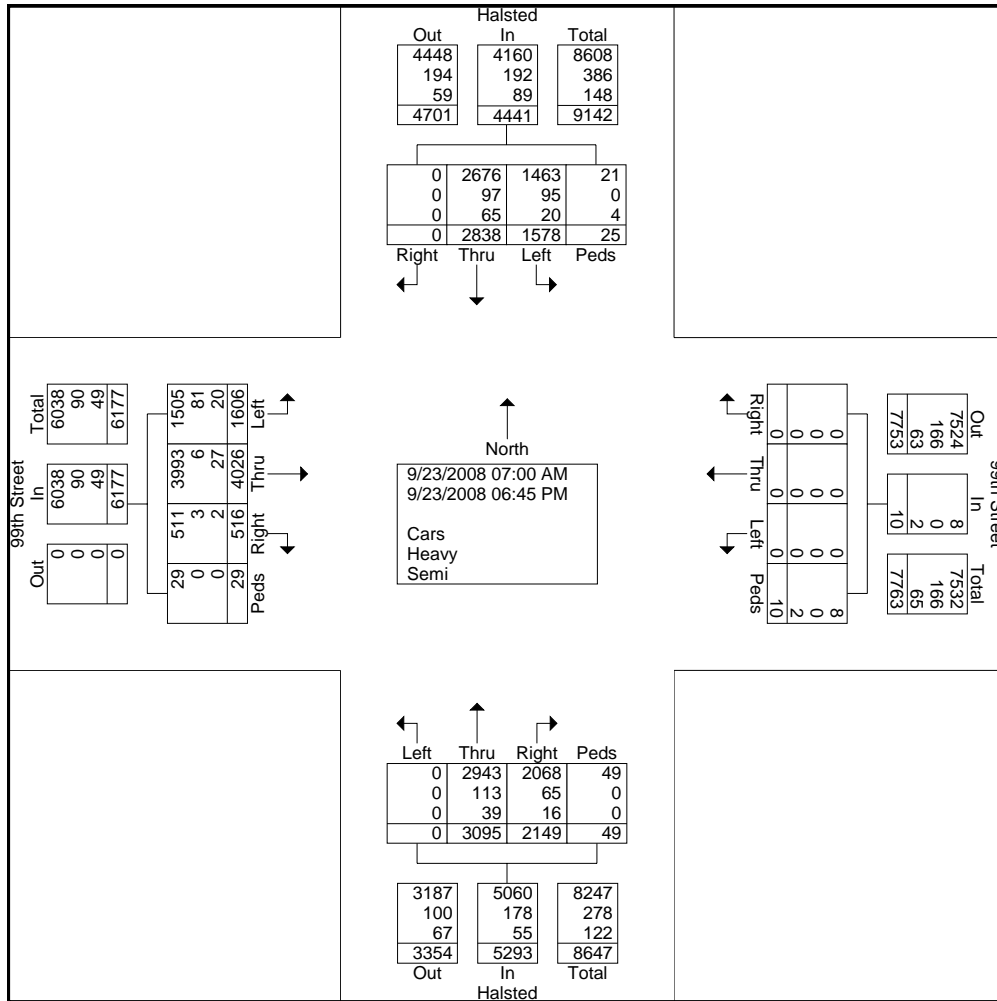
Combined (All Vechiles + Peds)

File Name : Halsted & 99th St

Site Code : 00002423

Start Date : 9/23/2008

Page No : 2



Fish Transportation Group

801 South Blvd Suite 5

Oak Park, IL 60302

Chicago

Halsted & 99th Street

Combined (All Vechiles + Peds)

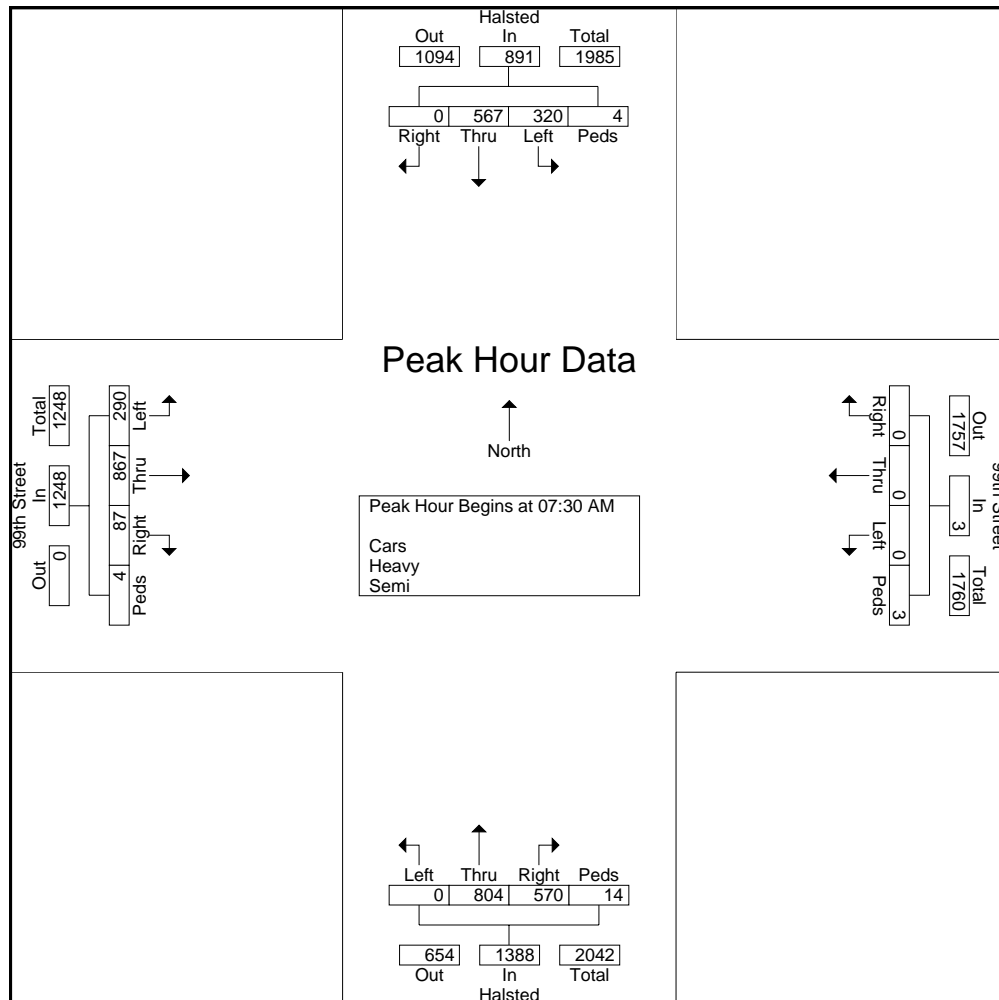
File Name : Halsted & 99th St

Site Code : 00002423

Start Date : 9/23/2008

Page No : 3

| | Halsted From North (SB) | | | | | 99th Street From East (WB) | | | | | Halsted From South (NB) | | | | | 99th Street From West (EB) | | | | | |
|--|----------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|----------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 93 | 118 | 0 | 1 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 194 | 150 | 11 | 355 | 71 | 205 | 9 | 1 | 286 | 853 |
| 07:45 AM | 62 | 143 | 0 | 1 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 243 | 155 | 0 | 398 | 70 | 212 | 16 | 2 | 300 | 904 |
| 08:00 AM | 97 | 150 | 0 | 0 | 247 | 0 | 0 | 0 | 2 | 2 | 0 | 156 | 135 | 2 | 293 | 68 | 258 | 19 | 0 | 345 | 887 |
| 08:15 AM | 68 | 156 | 0 | 2 | 226 | 0 | 0 | 0 | 1 | 1 | 0 | 211 | 130 | 1 | 342 | 81 | 192 | 43 | 1 | 317 | 886 |
| Total Volume | 320 | 567 | 0 | 4 | 891 | 0 | 0 | 0 | 3 | 3 | 0 | 804 | 570 | 14 | 1388 | 290 | 867 | 87 | 4 | 1248 | 3530 |
| % App. Total | 35.9 | 63.6 | 0 | 0.4 | | 0 | 0 | 0 | 100 | | 0 | 57.9 | 41.1 | 1 | | 23.2 | 69.5 | 7 | 0.3 | | |
| PHF | .825 | .909 | .000 | .500 | .902 | .000 | .000 | .000 | .375 | .375 | .000 | .827 | .919 | .318 | .872 | .895 | .840 | .506 | .500 | .904 | .976 |



Fish Transportation Group

801 South Blvd Suite 5

Oak Park, IL 60302

Chicago

Halsted & 99th Street

Combined (All Vechiles + Peds)

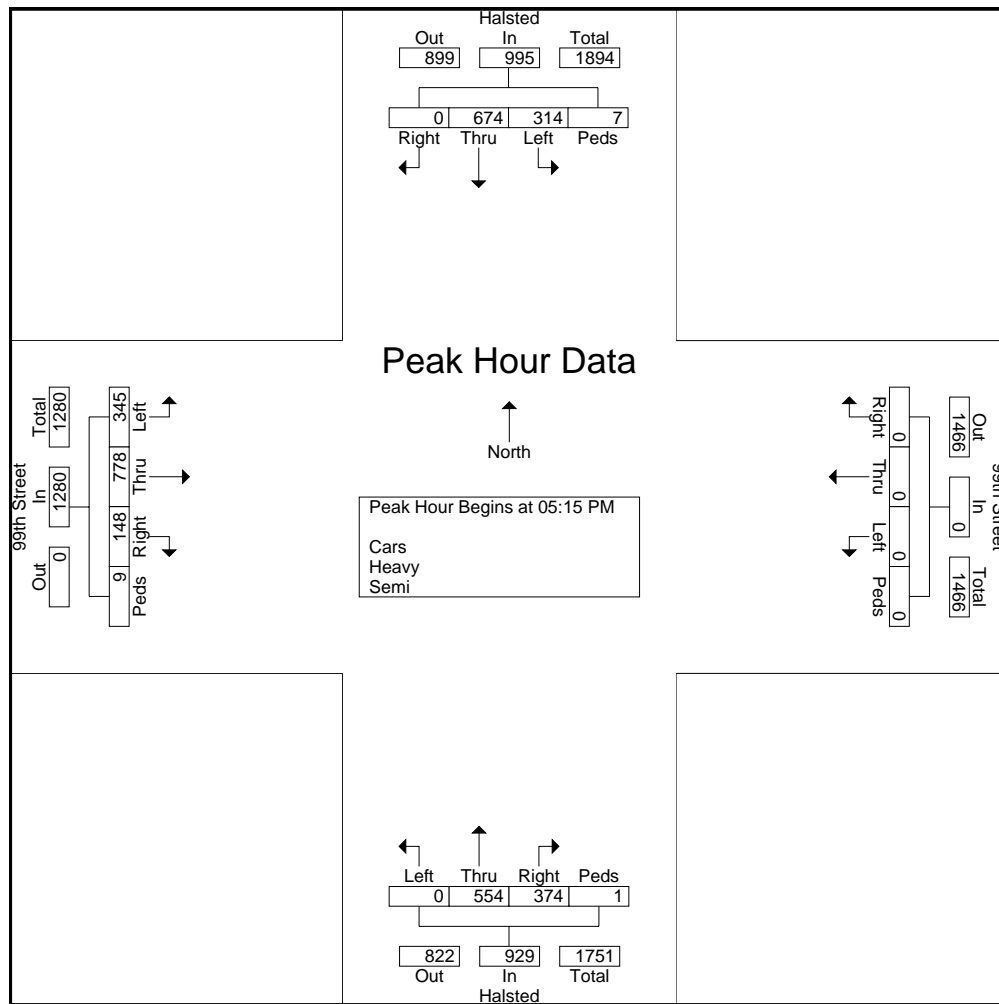
File Name : Halsted & 99th St

Site Code : 00002423

Start Date : 9/23/2008

Page No : 4

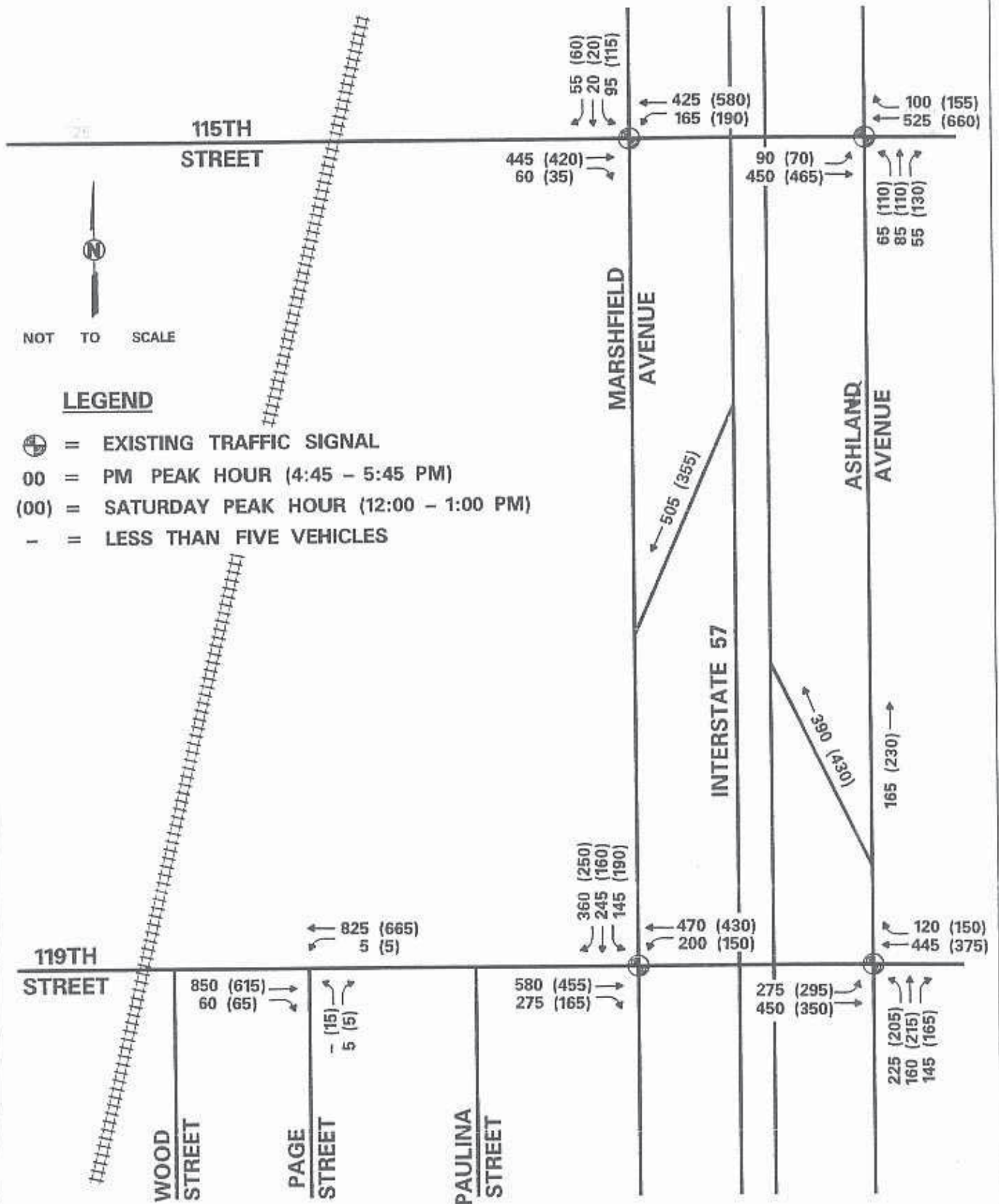
| | Halsted From North (SB) | | | | | 99th Street From East (WB) | | | | | Halsted From South (NB) | | | | | 99th Street From West (EB) | | | | | |
|--|----------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|----------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:15 PM | | | | | | | | | | | | | | | | | | | | | |
| 05:15 PM | 54 | 140 | 0 | 3 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 138 | 99 | 0 | 237 | 93 | 208 | 42 | 2 | 345 | 779 |
| 05:30 PM | 84 | 159 | 0 | 3 | 246 | 0 | 0 | 0 | 0 | 0 | 0 | 129 | 79 | 1 | 209 | 108 | 202 | 46 | 1 | 357 | 812 |
| 05:45 PM | 96 | 189 | 0 | 0 | 285 | 0 | 0 | 0 | 0 | 0 | 0 | 159 | 100 | 0 | 259 | 82 | 183 | 29 | 2 | 296 | 840 |
| 06:00 PM | 80 | 186 | 0 | 1 | 267 | 0 | 0 | 0 | 0 | 0 | 0 | 128 | 96 | 0 | 224 | 62 | 185 | 31 | 4 | 282 | 773 |
| Total Volume | 314 | 674 | 0 | 7 | 995 | 0 | 0 | 0 | 0 | 0 | 0 | 554 | 374 | 1 | 929 | 345 | 778 | 148 | 9 | 1280 | 3204 |
| % App. Total | 31.6 | 67.7 | 0 | 0.7 | | 0 | 0 | 0 | 0 | 0 | 0 | 59.6 | 40.3 | 0.1 | | 27 | 60.8 | 11.6 | 0.7 | | |
| PHF | .818 | .892 | .000 | .583 | .873 | .000 | .000 | .000 | .000 | .000 | .000 | .871 | .935 | .250 | .897 | .799 | .935 | .804 | .563 | .896 | .954 |



Summary
State Of Illinois
Department of Transportation
Bureau of Traffic
Summary of Traffic Survey

Dates: 7/25/2008 (AM)
7/21/2008 (PM)

| Route | Traffic From: Cottage Grove | | | Traffic From: Cottage Grove | | | Traffic From: 100th St. | | | Traffic From: 100th St. | | | TOTAL | | GRAND TOTAL | |
|------------|-----------------------------|-----|-------|-----------------------------|-----|-------|-------------------------|-------|-------|-------------------------|---|----|-------|------------|-------------|------------|
| | Going | | N | Going | | S | Going | | N | Going | | S | TOTAL | TOTAL EAST | | TOTAL WEST |
| | S | W | | S | W | | S | W | | S | W | | | | | |
| Start Hour | S | W | TOTAL | W | N | TOTAL | SOUTH | NORTH | TOTAL | S | W | N | TOTAL | S | TOTAL | WEST |
| 6:00 | 0 | 56 | 72 | 72 | 152 | 0 | 224 | 296 | 0 | 0 | 0 | 16 | 0 | 19 | 35 | 35 |
| 7:00 | 0 | 128 | 150 | 68 | 285 | 0 | 353 | 503 | 0 | 0 | 0 | 25 | 0 | 27 | 52 | 52 |
| 8:00 | 0 | 173 | 191 | 81 | 250 | 0 | 331 | 522 | 0 | 0 | 0 | 35 | 0 | 44 | 79 | 79 |
| 9:00 | 0 | 147 | 22 | 60 | 200 | 0 | 260 | 429 | 0 | 0 | 0 | 29 | 0 | 45 | 74 | 74 |
| 10:00 | 0 | 161 | 32 | 193 | 219 | 0 | 266 | 459 | 0 | 0 | 0 | 36 | 0 | 49 | 85 | 85 |
| 11:00 | 0 | 144 | 32 | 176 | 183 | 0 | 230 | 406 | 0 | 0 | 0 | 38 | 0 | 28 | 66 | 66 |
| 12:00 | 0 | 212 | 60 | 272 | 59 | 205 | 0 | 536 | 0 | 0 | 0 | 31 | 0 | 72 | 103 | 103 |
| 13:00 | 0 | 219 | 48 | 267 | 57 | 203 | 0 | 527 | 0 | 0 | 0 | 35 | 0 | 73 | 108 | 108 |
| 14:00 | 0 | 267 | 48 | 315 | 55 | 191 | 0 | 561 | 0 | 0 | 0 | 24 | 0 | 72 | 96 | 96 |
| 15:00 | 0 | 287 | 50 | 337 | 53 | 217 | 0 | 607 | 0 | 0 | 0 | 19 | 0 | 60 | 79 | 79 |
| 16:00 | 0 | 391 | 62 | 453 | 51 | 220 | 0 | 724 | 0 | 0 | 0 | 17 | 0 | 105 | 122 | 122 |
| 17:00 | 0 | 452 | 63 | 515 | 52 | 192 | 0 | 759 | 0 | 0 | 0 | 29 | 0 | 148 | 177 | 177 |



PROJECT:

PROPOSED SHOPPING CENTER
CHICAGO, ILLINOIS

TITLE:

EXISTING PEAK HOUR
VOLUMES

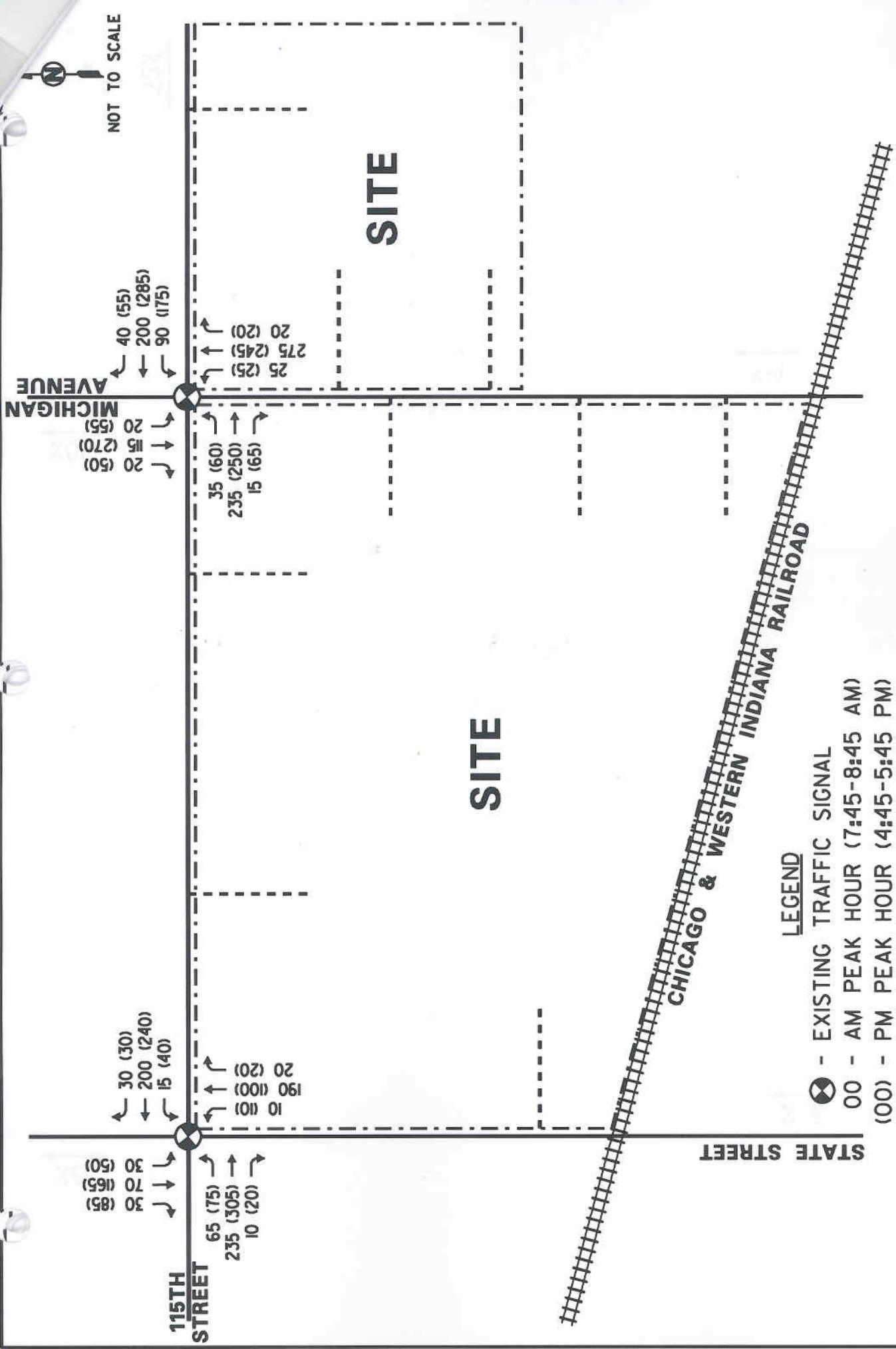
PROJECT NO:

05-402

KLOAN

FIGURE NO:

A-12
2



| | | | |
|---|------------------------------------|--|----|
| PROJECT NO: 08-293 | EXISTING PEAK HOUR TRAFFIC VOLUMES | | |
| FIGURE NO: 2 | | | |
| | | | |
| PROJECT: PROPOSED ROSELAND PLAZA CHICAGO, ILLINOIS | | | 13 |

Fish Transportation Group

801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Vincennes - 103rd St - Beverly
Combined (All Vehicles + Pedestrians)

File Name : Vincennes - Beverly & 103rd Rpt
Site Code : 00002244
Start Date : 12/20/2006
Page No : 1

Groups Printed- Cars - Single - Multi

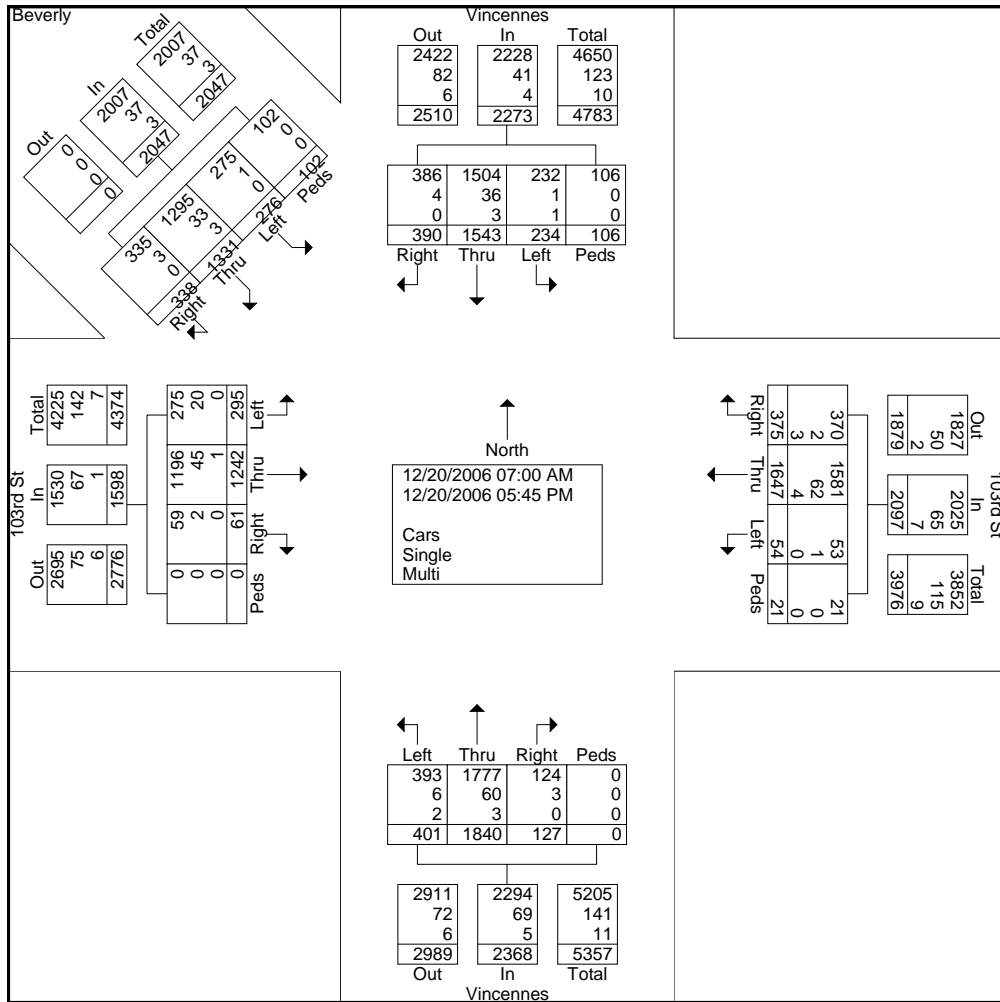
| | Vincennes From North | | | | 103rd St From East | | | | Vincennes From South | | | | 103rd St From West | | | | Beverly From Northwest | | | | Int. Total |
|---------------|-------------------------|-------|------|------|-----------------------|-------|------|------|-------------------------|-------|------|------|-----------------------|-------|------|------|---------------------------|-------|------|------|------------|
| Start Time | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | |
| 07:00 AM | 3 | 6 | 26 | 5 | 1 | 14 | 60 | 1 | 0 | 5 | 93 | 12 | 0 | 2 | 44 | 25 | 0 | 5 | 22 | 9 | 333 |
| 07:15 AM | 1 | 6 | 25 | 1 | 1 | 8 | 104 | 1 | 0 | 11 | 154 | 8 | 0 | 0 | 59 | 22 | 2 | 2 | 20 | 8 | 433 |
| 07:30 AM | 1 | 6 | 37 | 6 | 1 | 18 | 98 | 1 | 0 | 1 | 101 | 14 | 0 | 0 | 41 | 17 | 1 | 4 | 19 | 10 | 376 |
| 07:45 AM | 2 | 16 | 53 | 6 | 0 | 14 | 124 | 2 | 0 | 11 | 222 | 20 | 0 | 3 | 91 | 28 | 2 | 3 | 23 | 13 | 633 |
| Total | 7 | 34 | 141 | 18 | 3 | 54 | 386 | 5 | 0 | 28 | 570 | 54 | 0 | 5 | 235 | 92 | 5 | 14 | 84 | 40 | 1775 |
| 08:00 AM | 2 | 13 | 58 | 4 | 4 | 34 | 139 | 1 | 0 | 15 | 167 | 13 | 0 | 9 | 102 | 26 | 1 | 3 | 26 | 14 | 631 |
| 08:15 AM | 0 | 12 | 83 | 17 | 1 | 10 | 116 | 1 | 0 | 10 | 142 | 37 | 0 | 0 | 43 | 15 | 0 | 1 | 29 | 10 | 527 |
| 08:30 AM | 1 | 6 | 68 | 5 | 1 | 13 | 119 | 5 | 0 | 7 | 127 | 47 | 0 | 0 | 52 | 13 | 1 | 3 | 30 | 11 | 509 |
| 08:45 AM | 1 | 15 | 66 | 7 | 2 | 15 | 113 | 5 | 0 | 8 | 138 | 19 | 0 | 4 | 82 | 21 | 0 | 7 | 35 | 18 | 556 |
| Total | 4 | 46 | 275 | 33 | 8 | 72 | 487 | 12 | 0 | 40 | 574 | 116 | 0 | 13 | 279 | 75 | 2 | 14 | 120 | 53 | 2223 |
| *** BREAK *** | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 42 | 31 | 98 | 21 | 2 | 19 | 61 | 4 | 0 | 3 | 67 | 20 | 0 | 3 | 50 | 9 | 42 | 31 | 98 | 21 | 622 |
| 04:15 PM | 16 | 34 | 172 | 15 | 3 | 25 | 112 | 7 | 0 | 9 | 92 | 34 | 0 | 8 | 87 | 14 | 16 | 34 | 172 | 15 | 865 |
| 04:30 PM | 0 | 24 | 171 | 26 | 2 | 33 | 127 | 6 | 0 | 3 | 114 | 32 | 0 | 7 | 115 | 12 | 0 | 24 | 171 | 26 | 893 |
| 04:45 PM | 12 | 54 | 171 | 26 | 0 | 38 | 107 | 2 | 0 | 14 | 82 | 26 | 0 | 7 | 105 | 26 | 12 | 54 | 171 | 26 | 933 |
| Total | 70 | 143 | 612 | 88 | 7 | 115 | 407 | 19 | 0 | 29 | 355 | 112 | 0 | 25 | 357 | 61 | 70 | 143 | 612 | 88 | 3313 |
| 05:00 PM | 3 | 39 | 104 | 16 | 3 | 37 | 94 | 4 | 0 | 7 | 84 | 25 | 0 | 6 | 106 | 20 | 3 | 39 | 104 | 16 | 710 |
| 05:15 PM | 6 | 40 | 126 | 26 | 0 | 24 | 81 | 5 | 0 | 7 | 86 | 40 | 0 | 3 | 87 | 23 | 6 | 40 | 126 | 26 | 752 |
| 05:30 PM | 11 | 48 | 157 | 35 | 0 | 45 | 115 | 4 | 0 | 8 | 88 | 29 | 0 | 3 | 89 | 10 | 11 | 48 | 157 | 35 | 893 |
| 05:45 PM | 5 | 40 | 128 | 18 | 0 | 28 | 77 | 5 | 0 | 8 | 83 | 25 | 0 | 6 | 89 | 14 | 5 | 40 | 128 | 18 | 717 |
| Total | 25 | 167 | 515 | 95 | 3 | 134 | 367 | 18 | 0 | 30 | 341 | 119 | 0 | 18 | 371 | 67 | 25 | 167 | 515 | 95 | 3072 |
| Grand Total | 106 | 390 | 1543 | 234 | 21 | 375 | 1647 | 54 | 0 | 127 | 1840 | 401 | 0 | 61 | 1242 | 295 | 102 | 338 | 1331 | 276 | 10383 |
| Apprch % | 4.7 | 17.2 | 67.9 | 10.3 | 1 | 17.9 | 78.5 | 2.6 | 0 | 5.4 | 77.7 | 16.9 | 0 | 3.8 | 77.7 | 18.5 | 5 | 16.5 | 65 | 13.5 | |
| Total % | 1 | 3.8 | 14.9 | 2.3 | 0.2 | 3.6 | 15.9 | 0.5 | 0 | 1.2 | 17.7 | 3.9 | 0 | 0.6 | 12 | 2.8 | 1 | 3.3 | 12.8 | 2.7 | |
| Cars | 106 | 386 | 1504 | 232 | 21 | 370 | 1581 | 53 | 0 | 124 | 1777 | 393 | 0 | 59 | 1196 | 275 | 102 | 335 | 1295 | 275 | 10084 |
| % Cars | 100 | 99 | 97.5 | 99.1 | 100 | 98.7 | 96 | 98.1 | 0 | 97.6 | 96.6 | 98 | 0 | 96.7 | 96.3 | 93.2 | 100 | 99.1 | 97.3 | 99.6 | 97.1 |
| Single | 0 | 4 | 36 | 1 | 0 | 2 | 62 | 1 | 0 | 3 | 60 | 6 | 0 | 2 | 45 | 20 | 0 | 3 | 33 | 1 | 279 |
| % Single | 0 | 1 | 2.3 | 0.4 | 0 | 0.5 | 3.8 | 1.9 | 0 | 2.4 | 3.3 | 1.5 | 0 | 3.3 | 3.6 | 6.8 | 0 | 0.9 | 2.5 | 0.4 | 2.7 |
| Multi | 0 | 0 | 3 | 1 | 0 | 3 | 4 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 20 |
| % Multi | 0 | 0 | 0.2 | 0.4 | 0 | 0.8 | 0.2 | 0 | 0 | 0 | 0.2 | 0.5 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0.2 | 0 | 0.2 |

Fish Transportation Group

801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Vincennes - 103rd St - Beverly
Combined (All Vehicles + Pedestrians)

File Name : Vincennes - Beverly & 103rd Rpt
Site Code : 00002244
Start Date : 12/20/2006
Page No : 2



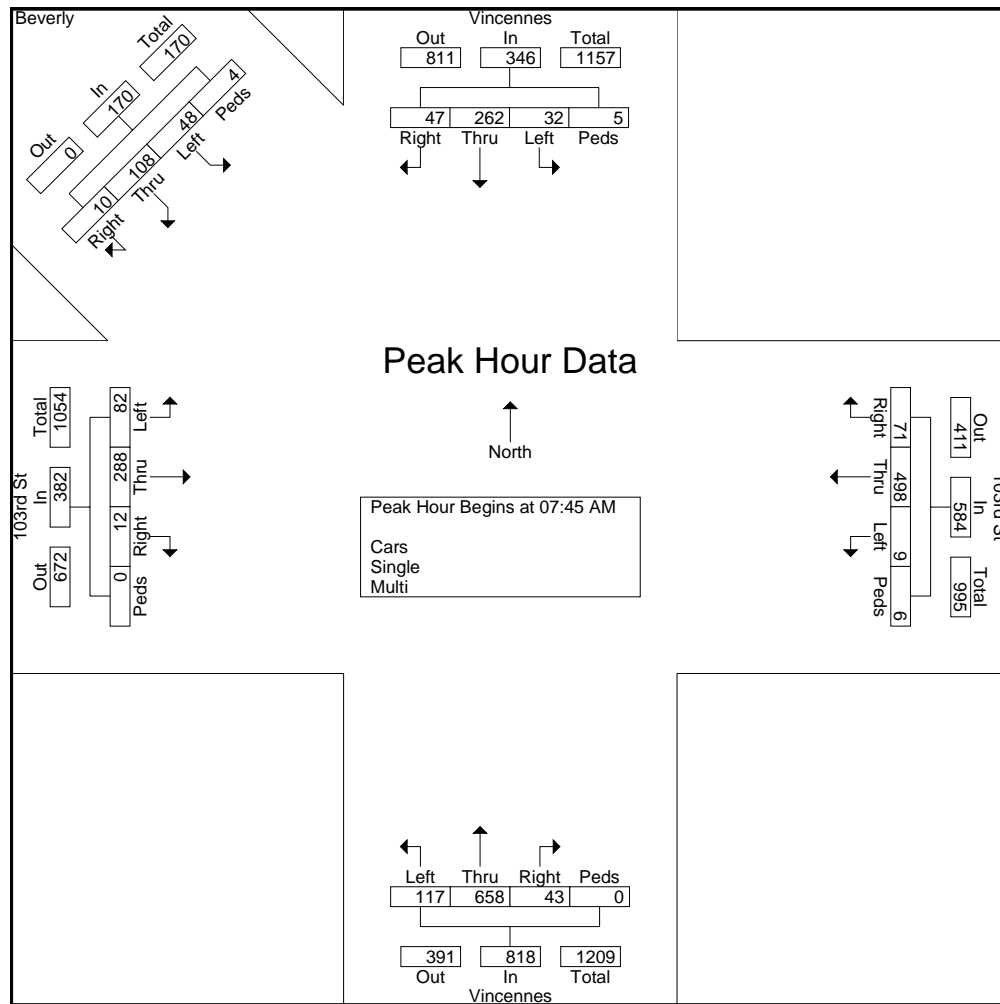
Fish Transportation Group

801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Vincennes - 103rd St - Beverly
Combined (All Vehicles + Pedestrians)

File Name : Vincennes - Beverly & 103rd Rpt
Site Code : 00002244
Start Date : 12/20/2006
Page No : 3

| | Vincennes From North | | | | | 103rd St From East | | | | | Vincennes From South | | | | | 103rd St From West | | | | | Beverly From Northwest | | | | | | |
|--|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|---------------------------|-------|------|------|------------|------------|--|
| Start Time | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Int. Total | |
| Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07:45 AM | 2 | 16 | 53 | 6 | 77 | 0 | 14 | 124 | 2 | 140 | 0 | 11 | 222 | 20 | 253 | 0 | 3 | 91 | 28 | 122 | 2 | 3 | 23 | 13 | 41 | 633 | |
| 08:00 AM | 2 | 13 | 58 | 4 | 77 | 4 | 34 | 139 | 1 | 178 | 0 | 15 | 167 | 13 | 195 | 0 | 9 | 102 | 26 | 137 | 1 | 3 | 26 | 14 | 44 | 631 | |
| 08:15 AM | 0 | 12 | 83 | 17 | 112 | 1 | 10 | 116 | 1 | 128 | 0 | 10 | 142 | 37 | 189 | 0 | 0 | 43 | 15 | 58 | 0 | 1 | 29 | 10 | 40 | 527 | |
| 08:30 AM | 1 | 6 | 68 | 5 | 80 | 1 | 13 | 119 | 5 | 138 | 0 | 7 | 127 | 47 | 181 | 0 | 0 | 52 | 13 | 65 | 1 | 3 | 30 | 11 | 45 | 509 | |
| Total Volume | 5 | 47 | 262 | 32 | 346 | 6 | 71 | 498 | 9 | 584 | 0 | 43 | 658 | 117 | 818 | 0 | 12 | 288 | 82 | 382 | 4 | 10 | 108 | 48 | 170 | 2300 | |
| % App. Total | 1.4 | 13.6 | 75.7 | 9.2 | | 1 | 12.2 | 85.3 | 1.5 | | 0 | 5.3 | 80.4 | 14.3 | | 0 | 3.1 | 75.4 | 21.5 | | 2.4 | 5.9 | 63.5 | 28.2 | | | |
| PHF | .625 | .734 | .789 | .471 | .772 | .375 | .522 | .896 | .450 | .820 | .000 | .717 | .741 | .622 | .808 | .000 | .333 | .706 | .732 | .697 | .500 | .833 | .900 | .857 | .944 | .908 | |



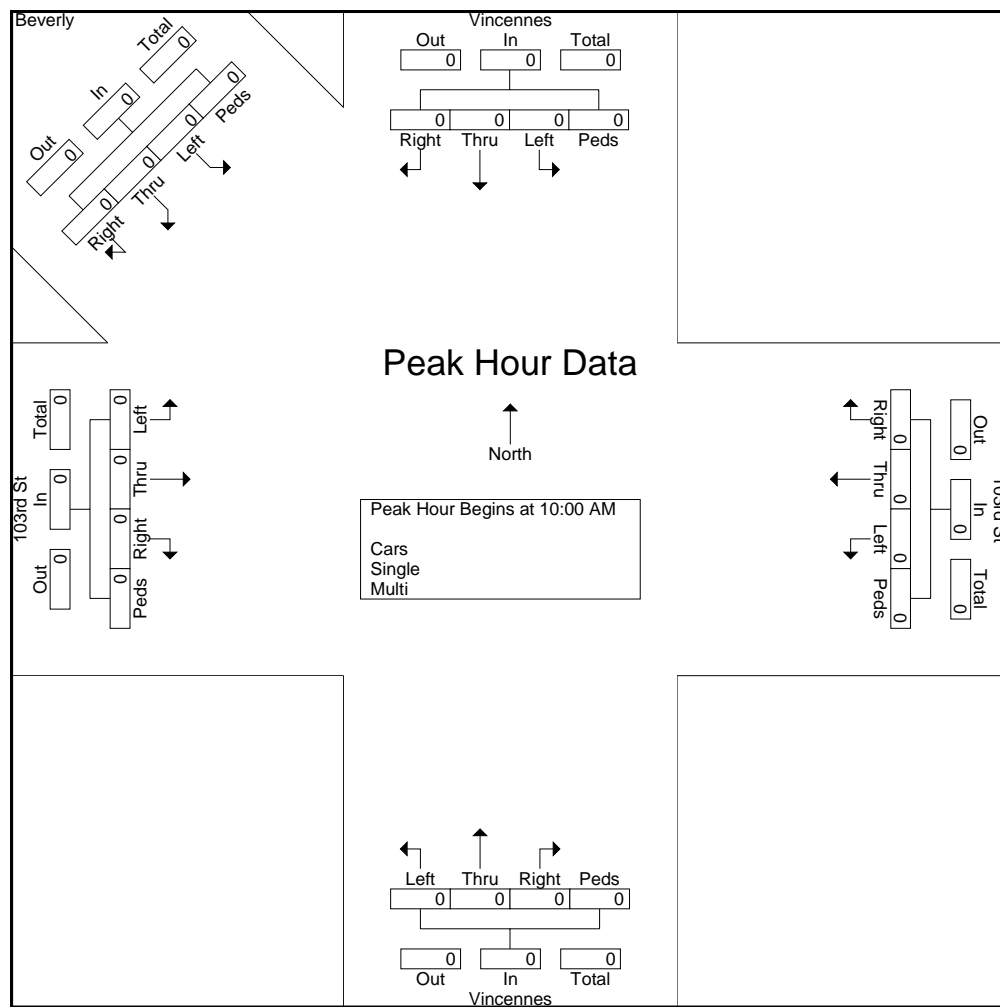
Fish Transportation Group

801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Vincennes - 103rd St - Beverly
Combined (All Vehicles + Pedestrians)

File Name : Vincennes - Beverly & 103rd Rpt
Site Code : 00002244
Start Date : 12/20/2006
Page No : 4

| | Vincennes From North | | | | | 103rd St From East | | | | | Vincennes From South | | | | | 103rd St From West | | | | | Beverly From Northwest | | | | | | |
|--|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|---------------------------|-------|------|------|------------|------------|--|
| Start Time | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Int. Total | |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 10:00 AM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 10:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 10:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 10:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| % App. Total | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | |



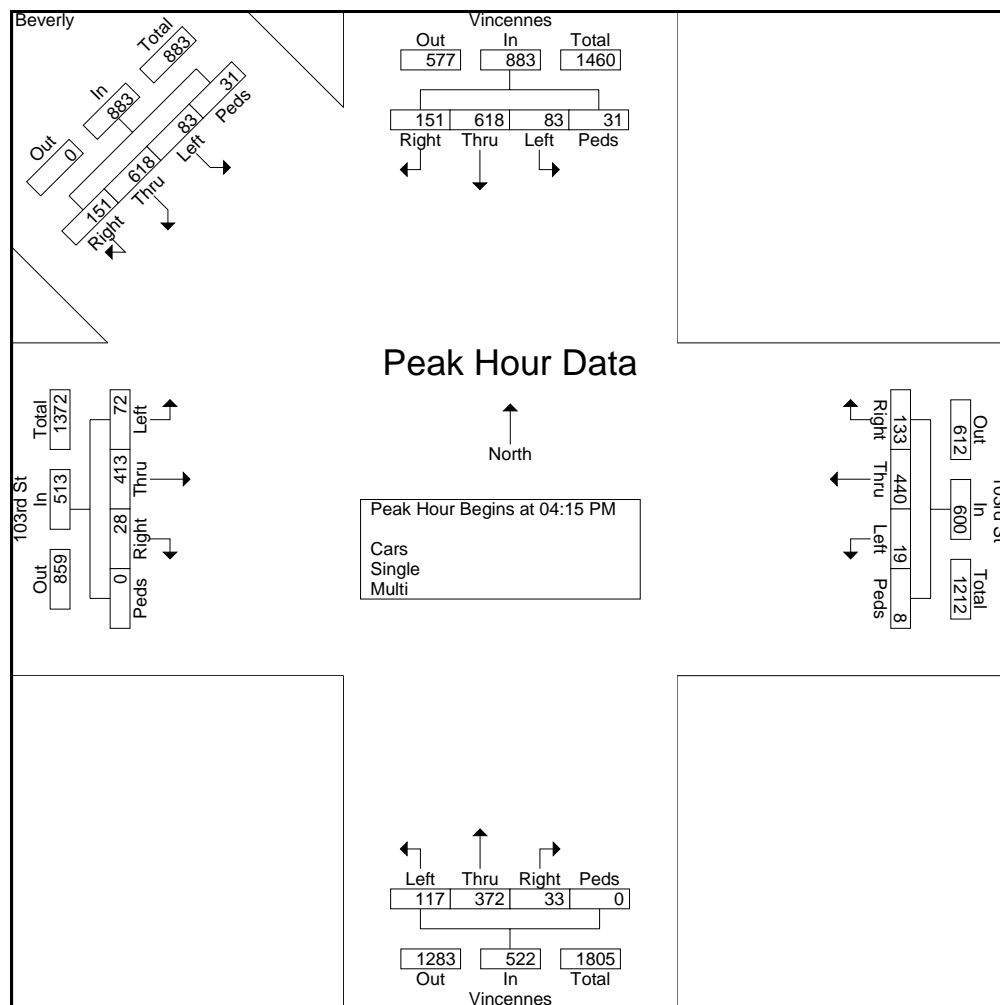
Fish Transportation Group

801 South Blvd Suite 5
Oak Park, IL 60302

Chicago
Vincennes - 103rd St - Beverly
Combined (All Vehicles + Pedestrians)

File Name : Vincennes - Beverly & 103rd Rpt
Site Code : 00002244
Start Date : 12/20/2006
Page No : 5

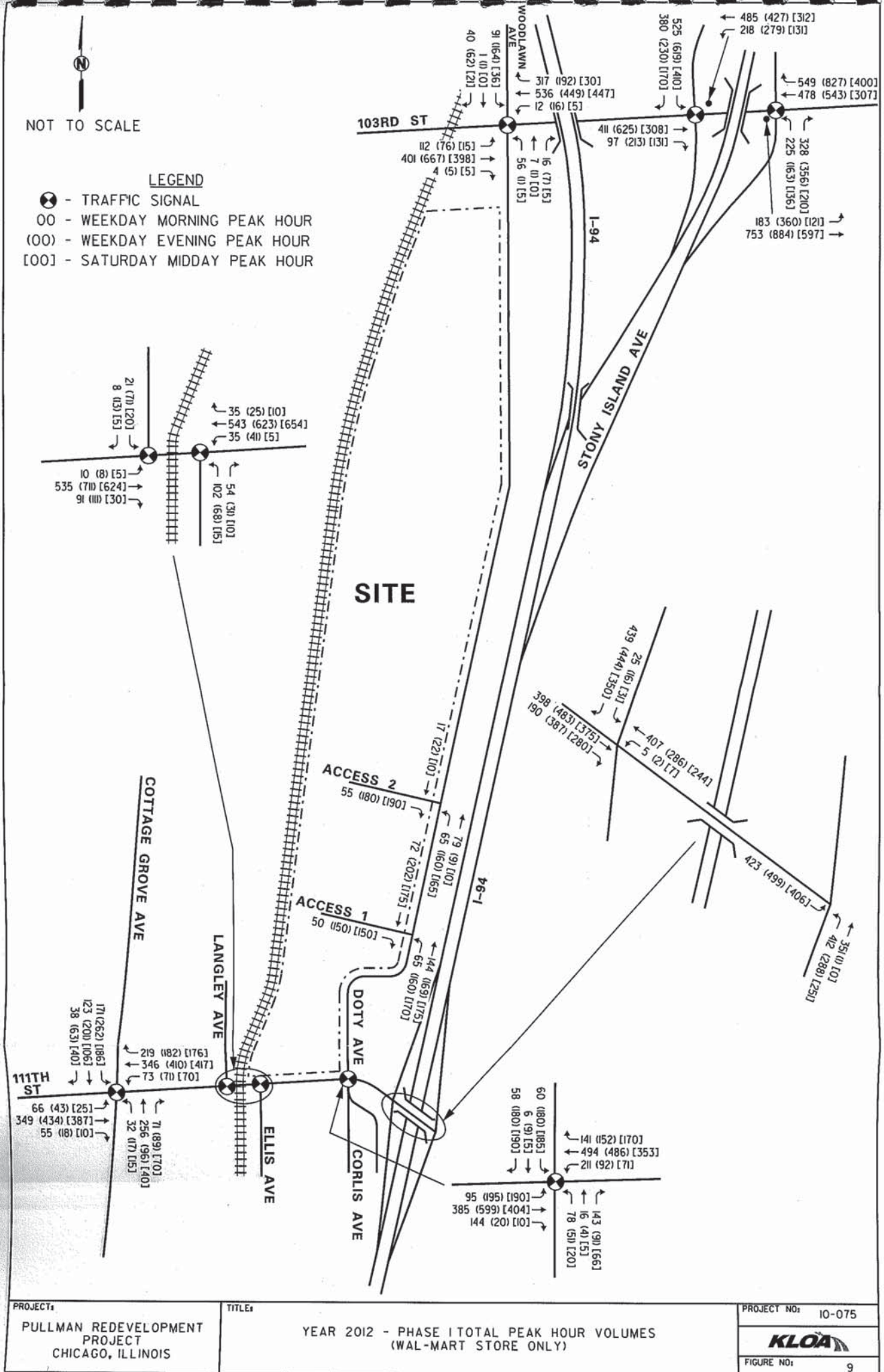
| | Vincennes From North | | | | | 103rd St From East | | | | | Vincennes From South | | | | | 103rd St From West | | | | | Beverly From Northwest | | | | | | |
|--|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|-------------------------|-------|------|------|------------|-----------------------|-------|------|------|------------|---------------------------|-------|------|------|------------|------------|--|
| Start Time | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Peds | Right | Thru | Left | App. Total | Int. Total | |
| Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:15 PM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04:15 PM | 16 | 34 | 172 | 15 | 237 | 3 | 25 | 112 | 7 | 147 | 0 | 9 | 92 | 34 | 135 | 0 | 8 | 87 | 14 | 109 | 16 | 34 | 172 | 15 | 237 | 865 | |
| 04:30 PM | 0 | 24 | 171 | 26 | 221 | 2 | 33 | 127 | 6 | 168 | 0 | 3 | 114 | 32 | 149 | 0 | 7 | 115 | 12 | 134 | 0 | 24 | 171 | 26 | 221 | 893 | |
| 04:45 PM | 12 | 54 | 171 | 26 | 263 | 0 | 38 | 107 | 2 | 147 | 0 | 14 | 82 | 26 | 122 | 0 | 7 | 105 | 26 | 138 | 12 | 54 | 171 | 26 | 263 | 933 | |
| 05:00 PM | 3 | 39 | 104 | 16 | 162 | 3 | 37 | 94 | 4 | 138 | 0 | 7 | 84 | 25 | 116 | 0 | 6 | 106 | 20 | 132 | 3 | 39 | 104 | 16 | 162 | 710 | |
| Total Volume | 31 | 151 | 618 | 83 | 883 | 8 | 133 | 440 | 19 | 600 | 0 | 33 | 372 | 117 | 522 | 0 | 28 | 413 | 72 | 513 | 31 | 151 | 618 | 83 | 883 | 3401 | |
| % App. Total | 3.5 | 17.1 | 70 | 9.4 | | 1.3 | 22.2 | 73.3 | 3.2 | | 0 | 6.3 | 71.3 | 22.4 | | 0 | 5.5 | 80.5 | 14 | | 3.5 | 17.1 | 70 | 9.4 | | | |
| PHF | .484 | .699 | .898 | .798 | .839 | .667 | .875 | .866 | .679 | .893 | .000 | .589 | .816 | .860 | .876 | .000 | .875 | .898 | .692 | .929 | .484 | .699 | .898 | .798 | .839 | .911 | |



NOT TO SCALE

LEGEND

- ⊗ - TRAFFIC SIGNAL
- 00 - WEEKDAY MORNING PEAK HOUR
- (00) - WEEKDAY EVENING PEAK HOUR
- [00] - SATURDAY MIDDAY PEAK HOUR



PROJECT:
PULLMAN REDEVELOPMENT
PROJECT
CHICAGO, ILLINOIS

TITLE:

YEAR 2012 - PHASE I TOTAL PEAK HOUR VOLUMES
(WAL-MART STORE ONLY)

PROJECT NO: 10-075

KLOA

FIGURE NO: 9

Regina Webster & Associates, Inc.

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www.RWAengineers.com

100th St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 3 | 24 | 7 | 34 | 27 | 28 | 2 | 57 | 0 | 73 | 3 | 76 | 2 | 5 | 4 | 11 | 178 |
| 07:15 AM | 2 | 39 | 5 | 46 | 30 | 27 | 0 | 57 | 2 | 110 | 3 | 115 | 2 | 6 | 6 | 14 | 232 |
| 07:30 AM | 2 | 47 | 13 | 62 | 39 | 37 | 2 | 78 | 4 | 118 | 4 | 126 | 2 | 3 | 6 | 11 | 277 |
| 07:45 AM | 1 | 45 | 10 | 56 | 52 | 40 | 3 | 95 | 1 | 132 | 3 | 136 | 5 | 13 | 11 | 29 | 316 |
| Total | 8 | 155 | 35 | 198 | 148 | 132 | 7 | 287 | 7 | 433 | 13 | 453 | 11 | 27 | 27 | 65 | 1003 |
| 08:00 AM | 3 | 47 | 15 | 65 | 41 | 32 | 3 | 76 | 1 | 142 | 4 | 147 | 7 | 12 | 14 | 33 | 321 |
| 08:15 AM | 5 | 54 | 12 | 71 | 39 | 21 | 0 | 60 | 3 | 125 | 5 | 133 | 3 | 14 | 13 | 30 | 294 |
| 08:30 AM | 7 | 67 | 11 | 85 | 42 | 24 | 0 | 66 | 3 | 125 | 1 | 129 | 1 | 15 | 15 | 31 | 311 |
| 08:45 AM | 1 | 87 | 24 | 112 | 47 | 34 | 2 | 83 | 2 | 125 | 1 | 128 | 3 | 14 | 33 | 50 | 373 |
| Total | 16 | 255 | 62 | 333 | 169 | 111 | 5 | 285 | 9 | 517 | 11 | 537 | 14 | 55 | 75 | 144 | 1299 |
| Grand Total | 24 | 410 | 97 | 531 | 317 | 243 | 12 | 572 | 16 | 950 | 24 | 990 | 25 | 82 | 102 | 209 | 2302 |
| Apprch % | 4.5 | 77.2 | 18.3 | | 55.4 | 42.5 | 2.1 | | 1.6 | 96 | 2.4 | | 12 | 39.2 | 48.8 | | |
| Total % | 1 | 17.8 | 4.2 | 23.1 | 13.8 | 10.6 | 0.5 | 24.8 | 0.7 | 41.3 | 1 | 43 | 1.1 | 3.6 | 4.4 | 9.1 | |
| PC | 24 | 390 | 94 | 508 | 313 | 236 | 11 | 560 | 16 | 920 | 24 | 960 | 25 | 80 | 101 | 206 | 2234 |
| % PC | 100 | 95.1 | 96.9 | 95.7 | 98.7 | 97.1 | 91.7 | 97.9 | 100 | 96.8 | 100 | 97 | 100 | 97.6 | 99 | 98.6 | 97 |
| SU | 0 | 19 | 3 | 22 | 4 | 7 | 1 | 12 | 0 | 28 | 0 | 28 | 0 | 2 | 1 | 3 | 65 |
| % SU | 0 | 4.6 | 3.1 | 4.1 | 1.3 | 2.9 | 8.3 | 2.1 | 0 | 2.9 | 0 | 2.8 | 0 | 2.4 | 1 | 1.4 | 2.8 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.1 |

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 3 | 47 | 15 | 65 | 41 | 32 | 3 | 76 | 1 | 142 | 4 | 147 | 7 | 12 | 14 | 33 | 321 |
| 08:15 AM | 5 | 54 | 12 | 71 | 39 | 21 | 0 | 60 | 3 | 125 | 5 | 133 | 3 | 14 | 13 | 30 | 294 |
| 08:30 AM | 7 | 67 | 11 | 85 | 42 | 24 | 0 | 66 | 3 | 125 | 1 | 129 | 1 | 15 | 15 | 31 | 311 |
| 08:45 AM | 1 | 87 | 24 | 112 | 47 | 34 | 2 | 83 | 2 | 125 | 1 | 128 | 3 | 14 | 33 | 50 | 373 |
| Total Volume | 16 | 255 | 62 | 333 | 169 | 111 | 5 | 285 | 9 | 517 | 11 | 537 | 14 | 55 | 75 | 144 | 1299 |
| % App. Total | 4.8 | 76.6 | 18.6 | | 59.3 | 38.9 | 1.8 | | 1.7 | 96.3 | 2 | | 9.7 | 38.2 | 52.1 | | |
| PHF | .571 | .733 | .646 | .743 | .899 | .816 | .417 | .858 | .750 | .910 | .550 | .913 | .500 | .917 | .568 | .720 | .871 |

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100th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 7 |
| 07:15 AM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 1 | 10 |
| 07:30 AM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| 07:45 AM | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 11 |
| Total | 0 | 10 | 1 | 11 | 0 | 3 | 0 | 3 | 0 | 18 | 0 | 18 | 0 | 1 | 0 | 1 | 33 |
| 08:00 AM | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 8 |
| 08:15 AM | 0 | 3 | 1 | 4 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:30 AM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 8 |
| 08:45 AM | 0 | 3 | 1 | 4 | 1 | 2 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 10 |
| Total | 0 | 9 | 2 | 11 | 4 | 4 | 1 | 9 | 0 | 10 | 0 | 10 | 0 | 1 | 1 | 2 | 32 |
| Grand Total | 0 | 19 | 3 | 22 | 4 | 7 | 1 | 12 | 0 | 28 | 0 | 28 | 0 | 2 | 1 | 3 | 65 |
| Apprch % | 0 | 86.4 | 13.6 | | 33.3 | 58.3 | 8.3 | | 0 | 100 | 0 | | 0 | 66.7 | 33.3 | | |
| Total % | 0 | 29.2 | 4.6 | 33.8 | 6.2 | 10.8 | 1.5 | 18.5 | 0 | 43.1 | 0 | 43.1 | 0 | 3.1 | 1.5 | 4.6 | |

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100th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 66.7 | 0 | 0 | 0 | 0 | |

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100th St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/5/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 100th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 100th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 07:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 1 | 1 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 1 | 1 | 12 |
| 08:00 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 3 |
| 08:30 AM | 0 | 1 | 1 | 1 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 1 | 1 | 8 | 9 | 1 | 0 | 1 | 0 | 0 | 0 | 11 |
| Grand Total | 0 | 3 | 3 | 1 | 14 | 15 | 1 | 3 | 4 | 0 | 1 | 1 | 23 |
| Apprch % | 0 | 100 | | 6.7 | 93.3 | | 25 | 75 | | 0 | 100 | | |
| Total % | 0 | 13 | 13 | 4.3 | 60.9 | 65.2 | 4.3 | 13 | 17.4 | 0 | 4.3 | 4.3 | |

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100th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 8 | 154 | 33 | 195 | 11 | 12 | 0 | 23 | 5 | 69 | 0 | 74 | 5 | 13 | 14 | 32 | 324 |
| 04:15 PM | 14 | 145 | 33 | 192 | 15 | 19 | 0 | 34 | 7 | 77 | 2 | 86 | 2 | 8 | 9 | 19 | 331 |
| 04:30 PM | 4 | 137 | 26 | 167 | 20 | 15 | 1 | 36 | 3 | 73 | 0 | 76 | 2 | 24 | 7 | 33 | 312 |
| 04:45 PM | 14 | 152 | 30 | 196 | 16 | 17 | 0 | 33 | 5 | 77 | 3 | 85 | 1 | 12 | 11 | 24 | 338 |
| Total | 40 | 588 | 122 | 750 | 62 | 63 | 1 | 126 | 20 | 296 | 5 | 321 | 10 | 57 | 41 | 108 | 1305 |
| 05:00 PM | 12 | 160 | 45 | 217 | 20 | 14 | 1 | 35 | 7 | 53 | 0 | 60 | 6 | 11 | 10 | 27 | 339 |
| 05:15 PM | 14 | 145 | 26 | 185 | 15 | 23 | 2 | 40 | 3 | 74 | 1 | 78 | 1 | 9 | 6 | 16 | 319 |
| 05:30 PM | 9 | 103 | 39 | 151 | 11 | 14 | 3 | 28 | 7 | 67 | 0 | 74 | 3 | 17 | 9 | 29 | 282 |
| 05:45 PM | 7 | 88 | 24 | 119 | 15 | 12 | 2 | 29 | 3 | 67 | 4 | 74 | 2 | 12 | 6 | 20 | 242 |
| Total | 42 | 496 | 134 | 672 | 61 | 63 | 8 | 132 | 20 | 261 | 5 | 286 | 12 | 49 | 31 | 92 | 1182 |
| Grand Total | 82 | 1084 | 256 | 1422 | 123 | 126 | 9 | 258 | 40 | 557 | 10 | 607 | 22 | 106 | 72 | 200 | 2487 |
| Apprch % | 5.8 | 76.2 | 18 | | 47.7 | 48.8 | 3.5 | | 6.6 | 91.8 | 1.6 | | 11 | 53 | 36 | | |
| Total % | 3.3 | 43.6 | 10.3 | 57.2 | 4.9 | 5.1 | 0.4 | 10.4 | 1.6 | 22.4 | 0.4 | 24.4 | 0.9 | 4.3 | 2.9 | 8 | |
| PC | 82 | 1071 | 256 | 1409 | 123 | 123 | 9 | 255 | 40 | 545 | 10 | 595 | 22 | 105 | 72 | 199 | 2458 |
| % PC | 100 | 98.8 | 100 | 99.1 | 100 | 97.6 | 100 | 98.8 | 100 | 97.8 | 100 | 98 | 100 | 99.1 | 100 | 99.5 | 98.8 |
| SU | 0 | 9 | 0 | 9 | 0 | 2 | 0 | 2 | 0 | 12 | 0 | 12 | 0 | 0 | 0 | 0 | 23 |
| % SU | 0 | 0.8 | 0 | 0.6 | 0 | 1.6 | 0 | 0.8 | 0 | 2.2 | 0 | 2 | 0 | 0 | 0 | 0 | 0.9 |
| MU | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| % MU | 0 | 0.4 | 0 | 0.3 | 0 | 0.8 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0.5 | 0.2 |

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:15 PM | | | | | | | | | | | | | | | | | |
| 04:15 PM | 14 | 145 | 33 | 192 | 15 | 19 | 0 | 34 | 7 | 77 | 2 | 86 | 2 | 8 | 9 | 19 | 331 |
| 04:30 PM | 4 | 137 | 26 | 167 | 20 | 15 | 1 | 36 | 3 | 73 | 0 | 76 | 2 | 24 | 7 | 33 | 312 |
| 04:45 PM | 14 | 152 | 30 | 196 | 16 | 17 | 0 | 33 | 5 | 77 | 3 | 85 | 1 | 12 | 11 | 24 | 338 |
| 05:00 PM | 12 | 160 | 45 | 217 | 20 | 14 | 1 | 35 | 7 | 53 | 0 | 60 | 6 | 11 | 10 | 27 | 339 |
| Total Volume | 44 | 594 | 134 | 772 | 71 | 65 | 2 | 138 | 22 | 280 | 5 | 307 | 11 | 55 | 37 | 103 | 1320 |
| % App. Total | 5.7 | 76.9 | 17.4 | | 51.4 | 47.1 | 1.4 | | 7.2 | 91.2 | 1.6 | | 10.7 | 53.4 | 35.9 | | |
| PHF | .786 | .928 | .744 | .889 | .888 | .855 | .500 | .958 | .786 | .909 | .417 | .892 | .458 | .573 | .841 | .780 | .973 |

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100th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 11 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 05:30 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 12 |
| Grand Total | 0 | 9 | 0 | 9 | 0 | 2 | 0 | 2 | 0 | 12 | 0 | 12 | 0 | 0 | 0 | 0 | 23 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 39.1 | 0 | 39.1 | 0 | 8.7 | 0 | 8.7 | 0 | 52.2 | 0 | 52.2 | 0 | 0 | 0 | 0 | |

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100th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 100th St From East | | | | Martin Luther King Dr From South | | | | 100th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 05:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 66.7 | 0 | 66.7 | 0 | 16.7 | 0 | 16.7 | 0 | 0 | 0 | 0 | 0 | 16.7 | 0 | 16.7 | |

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100th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/5/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 100th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 100th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 04:15 PM | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:30 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| 05:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 3 | 4 |
| 05:30 PM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 7 |
| 05:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 2 | 0 | 6 | 6 | 1 | 0 | 1 | 3 | 1 | 4 | 13 |
| Grand Total | 0 | 5 | 5 | 0 | 11 | 11 | 1 | 0 | 1 | 3 | 2 | 5 | 22 |
| Apprch % | 0 | 100 | | 0 | 100 | | 100 | 0 | | 60 | 40 | | |
| Total % | 0 | 22.7 | 22.7 | 0 | 50 | 50 | 4.5 | 0 | 4.5 | 13.6 | 9.1 | 22.7 | |

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103rd St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 16 | 4 | 26 | 14 | 37 | 2 | 53 | 7 | 67 | 8 | 82 | 11 | 31 | 20 | 62 | 223 |
| 07:15 AM | 8 | 31 | 3 | 42 | 10 | 60 | 13 | 83 | 10 | 85 | 12 | 107 | 9 | 48 | 11 | 68 | 300 |
| 07:30 AM | 7 | 24 | 7 | 38 | 18 | 52 | 11 | 81 | 10 | 101 | 8 | 119 | 10 | 70 | 17 | 97 | 335 |
| 07:45 AM | 14 | 36 | 11 | 61 | 11 | 65 | 8 | 84 | 12 | 65 | 10 | 87 | 23 | 80 | 17 | 120 | 352 |
| Total | 35 | 107 | 25 | 167 | 53 | 214 | 34 | 301 | 39 | 318 | 38 | 395 | 53 | 229 | 65 | 347 | 1210 |
| 08:00 AM | 12 | 37 | 17 | 66 | 16 | 61 | 12 | 89 | 6 | 83 | 18 | 107 | 18 | 87 | 17 | 122 | 384 |
| 08:15 AM | 8 | 27 | 15 | 50 | 14 | 61 | 9 | 84 | 10 | 71 | 20 | 101 | 16 | 93 | 27 | 136 | 371 |
| 08:30 AM | 12 | 33 | 10 | 55 | 15 | 53 | 8 | 76 | 12 | 80 | 14 | 106 | 12 | 101 | 21 | 134 | 371 |
| 08:45 AM | 14 | 34 | 22 | 70 | 18 | 69 | 7 | 94 | 18 | 62 | 16 | 96 | 16 | 98 | 11 | 125 | 385 |
| Total | 46 | 131 | 64 | 241 | 63 | 244 | 36 | 343 | 46 | 296 | 68 | 410 | 62 | 379 | 76 | 517 | 1511 |
| Grand Total | 81 | 238 | 89 | 408 | 116 | 458 | 70 | 644 | 85 | 614 | 106 | 805 | 115 | 608 | 141 | 864 | 2721 |
| Apprch % | 19.9 | 58.3 | 21.8 | | 18 | 71.1 | 10.9 | | 10.6 | 76.3 | 13.2 | | 13.3 | 70.4 | 16.3 | | |
| Total % | 3 | 8.7 | 3.3 | 15 | 4.3 | 16.8 | 2.6 | 23.7 | 3.1 | 22.6 | 3.9 | 29.6 | 4.2 | 22.3 | 5.2 | 31.8 | |
| PC | 69 | 211 | 78 | 358 | 101 | 436 | 64 | 601 | 79 | 571 | 105 | 755 | 111 | 572 | 129 | 812 | 2526 |
| % PC | 85.2 | 88.7 | 87.6 | 87.7 | 87.1 | 95.2 | 91.4 | 93.3 | 92.9 | 93 | 99.1 | 93.8 | 96.5 | 94.1 | 91.5 | 94 | 92.8 |
| SU | 12 | 27 | 11 | 50 | 15 | 19 | 5 | 39 | 5 | 42 | 1 | 48 | 4 | 30 | 12 | 46 | 183 |
| % SU | 14.8 | 11.3 | 12.4 | 12.3 | 12.9 | 4.1 | 7.1 | 6.1 | 5.9 | 6.8 | 0.9 | 6 | 3.5 | 4.9 | 8.5 | 5.3 | 6.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 1 | 1 | 0 | 2 | 0 | 6 | 0 | 6 | 12 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.7 | 1.4 | 0.6 | 1.2 | 0.2 | 0 | 0.2 | 0 | 1 | 0 | 0.7 | 0.4 |

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|--|----------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|----------------------------|-----------|-----------|------------|-----------------------|------------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 12 | 37 | 17 | 66 | 16 | 61 | 12 | 89 | 6 | 83 | 18 | 107 | 18 | 87 | 17 | 122 | 384 |
| 08:15 AM | 8 | 27 | 15 | 50 | 14 | 61 | 9 | 84 | 10 | 71 | 20 | 101 | 16 | 93 | 27 | 136 | 371 |
| 08:30 AM | 12 | 33 | 10 | 55 | 15 | 53 | 8 | 76 | 12 | 80 | 14 | 106 | 12 | 101 | 21 | 134 | 371 |
| 08:45 AM | 14 | 34 | 22 | 70 | 18 | 69 | 7 | 94 | 18 | 62 | 16 | 96 | 16 | 98 | 11 | 125 | 385 |
| Total Volume | 46 | 131 | 64 | 241 | 63 | 244 | 36 | 343 | 46 | 296 | 68 | 410 | 62 | 379 | 76 | 517 | 1511 |
| % App. Total | 19.1 | 54.4 | 26.6 | | 18.4 | 71.1 | 10.5 | | 11.2 | 72.2 | 16.6 | | 12 | 73.3 | 14.7 | | |
| PHF | .821 | .885 | .727 | .861 | .875 | .884 | .750 | .912 | .639 | .892 | .850 | .958 | .861 | .938 | .704 | .950 | .981 |

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103rd St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 3 | 1 | 5 | 2 | 3 | 0 | 5 | 0 | 10 | 0 | 10 | 0 | 1 | 2 | 3 | 23 |
| 07:15 AM | 1 | 4 | 1 | 6 | 4 | 1 | 2 | 7 | 0 | 6 | 0 | 6 | 0 | 3 | 2 | 5 | 24 |
| 07:30 AM | 4 | 3 | 1 | 8 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 1 | 5 | 1 | 7 | 23 |
| 07:45 AM | 2 | 4 | 2 | 8 | 2 | 2 | 0 | 4 | 1 | 5 | 0 | 6 | 1 | 2 | 1 | 4 | 22 |
| Total | 8 | 14 | 5 | 27 | 8 | 10 | 2 | 20 | 1 | 25 | 0 | 26 | 2 | 11 | 6 | 19 | 92 |
| 08:00 AM | 1 | 3 | 1 | 5 | 1 | 3 | 0 | 4 | 2 | 2 | 1 | 5 | 0 | 3 | 1 | 4 | 18 |
| 08:15 AM | 1 | 4 | 1 | 6 | 1 | 2 | 0 | 3 | 2 | 7 | 0 | 9 | 1 | 4 | 1 | 6 | 24 |
| 08:30 AM | 1 | 2 | 1 | 4 | 1 | 1 | 2 | 4 | 0 | 3 | 0 | 3 | 1 | 6 | 3 | 10 | 21 |
| 08:45 AM | 1 | 4 | 3 | 8 | 4 | 3 | 1 | 8 | 0 | 5 | 0 | 5 | 0 | 6 | 1 | 7 | 28 |
| Total | 4 | 13 | 6 | 23 | 7 | 9 | 3 | 19 | 4 | 17 | 1 | 22 | 2 | 19 | 6 | 27 | 91 |
| Grand Total | 12 | 27 | 11 | 50 | 15 | 19 | 5 | 39 | 5 | 42 | 1 | 48 | 4 | 30 | 12 | 46 | 183 |
| Apprch % | 24 | 54 | 22 | | 38.5 | 48.7 | 12.8 | | 10.4 | 87.5 | 2.1 | | 8.7 | 65.2 | 26.1 | | |
| Total % | 6.6 | 14.8 | 6 | 27.3 | 8.2 | 10.4 | 2.7 | 21.3 | 2.7 | 23 | 0.5 | 26.2 | 2.2 | 16.4 | 6.6 | 25.1 | |

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103rd St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 4 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 9 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 1 | 1 | 0 | 2 | 0 | 6 | 0 | 6 | 12 |
| Apprch % | 0 | 0 | 0 | | 0 | 75 | 25 | | 50 | 50 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 25 | 8.3 | 33.3 | 8.3 | 8.3 | 0 | 16.7 | 0 | 50 | 0 | 50 | |

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103rd St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds + Bikes

Site Code : 00000000

Start Date : 5/2/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 28 | 28 | 0 | 14 | 14 | 0 | 3 | 3 | 0 | 9 | 9 | 54 |
| 07:15 AM | 0 | 32 | 32 | 0 | 23 | 23 | 0 | 6 | 6 | 0 | 2 | 2 | 63 |
| 07:30 AM | 0 | 21 | 21 | 0 | 11 | 11 | 0 | 1 | 1 | 0 | 7 | 7 | 40 |
| 07:45 AM | 0 | 36 | 36 | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 7 | 7 | 49 |
| Total | 0 | 117 | 117 | 0 | 53 | 53 | 0 | 11 | 11 | 0 | 25 | 25 | 206 |
| 08:00 AM | 0 | 23 | 23 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 7 | 7 | 34 |
| 08:15 AM | 0 | 18 | 18 | 0 | 34 | 34 | 0 | 6 | 6 | 0 | 7 | 7 | 65 |
| 08:30 AM | 0 | 43 | 43 | 0 | 21 | 21 | 0 | 2 | 2 | 0 | 8 | 8 | 74 |
| 08:45 AM | 0 | 35 | 35 | 0 | 9 | 9 | 0 | 7 | 7 | 0 | 8 | 8 | 59 |
| Total | 0 | 119 | 119 | 0 | 66 | 66 | 0 | 17 | 17 | 0 | 30 | 30 | 232 |
| Grand Total | 0 | 236 | 236 | 0 | 119 | 119 | 0 | 28 | 28 | 0 | 55 | 55 | 438 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 53.9 | 53.9 | 0 | 27.2 | 27.2 | 0 | 6.4 | 6.4 | 0 | 12.6 | 12.6 | |

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103rd St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 16 | 71 | 12 | 99 | 11 | 68 | 13 | 92 | 13 | 55 | 11 | 79 | 14 | 74 | 15 | 103 | 373 |
| 04:15 PM | 20 | 47 | 12 | 79 | 19 | 79 | 17 | 115 | 10 | 49 | 8 | 67 | 26 | 73 | 14 | 113 | 374 |
| 04:30 PM | 16 | 69 | 19 | 104 | 15 | 71 | 16 | 102 | 10 | 40 | 14 | 64 | 26 | 98 | 13 | 137 | 407 |
| 04:45 PM | 10 | 54 | 16 | 80 | 20 | 63 | 9 | 92 | 7 | 40 | 16 | 63 | 30 | 111 | 14 | 155 | 390 |
| Total | 62 | 241 | 59 | 362 | 65 | 281 | 55 | 401 | 40 | 184 | 49 | 273 | 96 | 356 | 56 | 508 | 1544 |
| 05:00 PM | 22 | 50 | 23 | 95 | 17 | 85 | 12 | 114 | 10 | 43 | 15 | 68 | 13 | 109 | 12 | 134 | 411 |
| 05:15 PM | 17 | 50 | 18 | 85 | 14 | 72 | 14 | 100 | 17 | 38 | 12 | 67 | 20 | 102 | 18 | 140 | 392 |
| 05:30 PM | 15 | 54 | 20 | 89 | 14 | 79 | 14 | 107 | 17 | 50 | 14 | 81 | 21 | 89 | 10 | 120 | 397 |
| 05:45 PM | 16 | 69 | 20 | 105 | 8 | 69 | 18 | 95 | 19 | 44 | 13 | 76 | 17 | 89 | 10 | 116 | 392 |
| Total | 70 | 223 | 81 | 374 | 53 | 305 | 58 | 416 | 63 | 175 | 54 | 292 | 71 | 389 | 50 | 510 | 1592 |
| Grand Total | 132 | 464 | 140 | 736 | 118 | 586 | 113 | 817 | 103 | 359 | 103 | 565 | 167 | 745 | 106 | 1018 | 3136 |
| Apprch % | 17.9 | 63 | 19 | | 14.4 | 71.7 | 13.8 | | 18.2 | 63.5 | 18.2 | | 16.4 | 73.2 | 10.4 | | |
| Total % | 4.2 | 14.8 | 4.5 | 23.5 | 3.8 | 18.7 | 3.6 | 26.1 | 3.3 | 11.4 | 3.3 | 18 | 5.3 | 23.8 | 3.4 | 32.5 | |
| PC | 120 | 441 | 133 | 694 | 108 | 580 | 113 | 801 | 102 | 335 | 102 | 539 | 167 | 738 | 91 | 996 | 3030 |
| % PC | 90.9 | 95 | 95 | 94.3 | 91.5 | 99 | 100 | 98 | 99 | 93.3 | 99 | 95.4 | 100 | 99.1 | 85.8 | 97.8 | 96.6 |
| SU | 12 | 23 | 7 | 42 | 10 | 6 | 0 | 16 | 1 | 24 | 1 | 26 | 0 | 6 | 14 | 20 | 104 |
| % SU | 9.1 | 5 | 5 | 5.7 | 8.5 | 1 | 0 | 2 | 1 | 6.7 | 1 | 4.6 | 0 | 0.8 | 13.2 | 2 | 3.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.9 | 0.2 | 0.1 |

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|--|----------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|----------------------------|-----------|-----------|------------|-----------------------|------------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 16 | 69 | 19 | 104 | 15 | 71 | 16 | 102 | 10 | 40 | 14 | 64 | 26 | 98 | 13 | 137 | 407 |
| 04:45 PM | 10 | 54 | 16 | 80 | 20 | 63 | 9 | 92 | 7 | 40 | 16 | 63 | 30 | 111 | 14 | 155 | 390 |
| 05:00 PM | 22 | 50 | 23 | 95 | 17 | 85 | 12 | 114 | 10 | 43 | 15 | 68 | 13 | 109 | 12 | 134 | 411 |
| 05:15 PM | 17 | 50 | 18 | 85 | 14 | 72 | 14 | 100 | 17 | 38 | 12 | 67 | 20 | 102 | 18 | 140 | 392 |
| Total Volume | 65 | 223 | 76 | 364 | 66 | 291 | 51 | 408 | 44 | 161 | 57 | 262 | 89 | 420 | 57 | 566 | 1600 |
| % App. Total | 17.9 | 61.3 | 20.9 | | 16.2 | 71.3 | 12.5 | | 16.8 | 61.5 | 21.8 | | 15.7 | 74.2 | 10.1 | | |
| PHF | .739 | .808 | .826 | .875 | .825 | .856 | .797 | .895 | .647 | .936 | .891 | .963 | .742 | .946 | .792 | .913 | .973 |

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103rd St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 4 | 0 | 6 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 0 | 3 | 3 | 15 |
| 04:15 PM | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 8 |
| 04:30 PM | 1 | 3 | 2 | 6 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 11 |
| 04:45 PM | 1 | 5 | 1 | 7 | 2 | 0 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 2 | 2 | 4 | 16 |
| Total | 7 | 12 | 3 | 22 | 5 | 3 | 0 | 8 | 0 | 10 | 1 | 11 | 0 | 2 | 7 | 9 | 50 |
| 05:00 PM | 1 | 3 | 1 | 5 | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 12 |
| 05:15 PM | 1 | 3 | 1 | 5 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 3 | 3 | 12 |
| 05:30 PM | 2 | 3 | 1 | 6 | 1 | 2 | 0 | 3 | 0 | 5 | 0 | 5 | 0 | 3 | 1 | 4 | 18 |
| 05:45 PM | 1 | 2 | 1 | 4 | 2 | 0 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 1 | 2 | 3 | 12 |
| Total | 5 | 11 | 4 | 20 | 5 | 3 | 0 | 8 | 1 | 14 | 0 | 15 | 0 | 4 | 7 | 11 | 54 |
| Grand Total | 12 | 23 | 7 | 42 | 10 | 6 | 0 | 16 | 1 | 24 | 1 | 26 | 0 | 6 | 14 | 20 | 104 |
| Apprch % | 28.6 | 54.8 | 16.7 | | 62.5 | 37.5 | 0 | | 3.8 | 92.3 | 3.8 | | 0 | 30 | 70 | | |
| Total % | 11.5 | 22.1 | 6.7 | 40.4 | 9.6 | 5.8 | 0 | 15.4 | 1 | 23.1 | 1 | 25 | 0 | 5.8 | 13.5 | 19.2 | |

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103rd St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 103rd St From East | | | | Michigan Ave From South | | | | 103rd St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | | |
| Total % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | 100 | |

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103rd St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds + Bikes

Site Code : 00000000

Start Date : 5/2/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 48 | 48 | 0 | 23 | 23 | 0 | 19 | 19 | 0 | 0 | 0 | 90 |
| 04:15 PM | 0 | 39 | 39 | 0 | 23 | 23 | 0 | 22 | 22 | 0 | 4 | 4 | 88 |
| 04:30 PM | 0 | 27 | 27 | 0 | 6 | 6 | 0 | 27 | 27 | 0 | 8 | 8 | 68 |
| 04:45 PM | 0 | 35 | 35 | 0 | 20 | 20 | 0 | 18 | 18 | 0 | 11 | 11 | 84 |
| Total | 0 | 149 | 149 | 0 | 72 | 72 | 0 | 86 | 86 | 0 | 23 | 23 | 330 |
| 05:00 PM | 0 | 25 | 25 | 1 | 8 | 9 | 0 | 26 | 26 | 0 | 5 | 5 | 65 |
| 05:15 PM | 0 | 36 | 36 | 0 | 14 | 14 | 0 | 30 | 30 | 0 | 2 | 2 | 82 |
| 05:30 PM | 0 | 23 | 23 | 0 | 12 | 12 | 0 | 21 | 21 | 0 | 7 | 7 | 63 |
| 05:45 PM | 0 | 28 | 28 | 0 | 19 | 19 | 0 | 22 | 22 | 0 | 9 | 9 | 78 |
| Total | 0 | 112 | 112 | 1 | 53 | 54 | 0 | 99 | 99 | 0 | 23 | 23 | 288 |
| Grand Total | 0 | 261 | 261 | 1 | 125 | 126 | 0 | 185 | 185 | 0 | 46 | 46 | 618 |
| Apprch % | 0 | 100 | | 0.8 | 99.2 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 42.2 | 42.2 | 0.2 | 20.2 | 20.4 | 0 | 29.9 | 29.9 | 0 | 7.4 | 7.4 | |

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103rd St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 11 | 23 | 5 | 39 | 19 | 57 | 2 | 78 | 17 | 48 | 9 | 74 | 3 | 37 | 4 | 44 | 235 |
| 07:15 AM | 6 | 24 | 12 | 42 | 14 | 90 | 12 | 116 | 14 | 71 | 15 | 100 | 8 | 42 | 13 | 63 | 321 |
| 07:30 AM | 10 | 33 | 6 | 49 | 19 | 59 | 15 | 93 | 26 | 65 | 8 | 99 | 9 | 41 | 13 | 63 | 304 |
| 07:45 AM | 7 | 44 | 21 | 72 | 25 | 90 | 17 | 132 | 32 | 97 | 17 | 146 | 12 | 65 | 15 | 92 | 442 |
| Total | 34 | 124 | 44 | 202 | 77 | 296 | 46 | 419 | 89 | 281 | 49 | 419 | 32 | 185 | 45 | 262 | 1302 |
| 08:00 AM | 6 | 39 | 11 | 56 | 17 | 76 | 9 | 102 | 25 | 78 | 12 | 115 | 8 | 74 | 16 | 98 | 371 |
| 08:15 AM | 9 | 30 | 13 | 52 | 34 | 87 | 13 | 134 | 14 | 60 | 7 | 81 | 5 | 67 | 9 | 81 | 348 |
| 08:30 AM | 9 | 38 | 12 | 59 | 17 | 81 | 10 | 108 | 22 | 93 | 4 | 119 | 13 | 80 | 4 | 97 | 383 |
| 08:45 AM | 11 | 54 | 11 | 76 | 26 | 100 | 14 | 140 | 22 | 70 | 9 | 101 | 10 | 71 | 9 | 90 | 407 |
| Total | 35 | 161 | 47 | 243 | 94 | 344 | 46 | 484 | 83 | 301 | 32 | 416 | 36 | 292 | 38 | 366 | 1509 |
| Grand Total | 69 | 285 | 91 | 445 | 171 | 640 | 92 | 903 | 172 | 582 | 81 | 835 | 68 | 477 | 83 | 628 | 2811 |
| Apprch % | 15.5 | 64 | 20.4 | | 18.9 | 70.9 | 10.2 | | 20.6 | 69.7 | 9.7 | | 10.8 | 76 | 13.2 | | |
| Total % | 2.5 | 10.1 | 3.2 | 15.8 | 6.1 | 22.8 | 3.3 | 32.1 | 6.1 | 20.7 | 2.9 | 29.7 | 2.4 | 17 | 3 | 22.3 | |
| PC | 66 | 268 | 89 | 423 | 160 | 584 | 74 | 818 | 166 | 552 | 79 | 797 | 65 | 438 | 76 | 579 | 2617 |
| % PC | 95.7 | 94 | 97.8 | 95.1 | 93.6 | 91.2 | 80.4 | 90.6 | 96.5 | 94.8 | 97.5 | 95.4 | 95.6 | 91.8 | 91.6 | 92.2 | 93.1 |
| SU | 3 | 17 | 2 | 22 | 7 | 40 | 13 | 60 | 5 | 29 | 1 | 35 | 3 | 38 | 6 | 47 | 164 |
| % SU | 4.3 | 6 | 2.2 | 4.9 | 4.1 | 6.2 | 14.1 | 6.6 | 2.9 | 5 | 1.2 | 4.2 | 4.4 | 8 | 7.2 | 7.5 | 5.8 |
| MU | 0 | 0 | 0 | 0 | 4 | 16 | 5 | 25 | 1 | 1 | 1 | 3 | 0 | 1 | 1 | 2 | 30 |
| % MU | 0 | 0 | 0 | 0 | 2.3 | 2.5 | 5.4 | 2.8 | 0.6 | 0.2 | 1.2 | 0.4 | 0 | 0.2 | 1.2 | 0.3 | 1.1 |

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 7 | 44 | 21 | 72 | 25 | 90 | 17 | 132 | 32 | 97 | 17 | 146 | 12 | 65 | 15 | 92 | 442 |
| 08:00 AM | 6 | 39 | 11 | 56 | 17 | 76 | 9 | 102 | 25 | 78 | 12 | 115 | 8 | 74 | 16 | 98 | 371 |
| 08:15 AM | 9 | 30 | 13 | 52 | 34 | 87 | 13 | 134 | 14 | 60 | 7 | 81 | 5 | 67 | 9 | 81 | 348 |
| 08:30 AM | 9 | 38 | 12 | 59 | 17 | 81 | 10 | 108 | 22 | 93 | 4 | 119 | 13 | 80 | 4 | 97 | 383 |
| Total Volume | 31 | 151 | 57 | 239 | 93 | 334 | 49 | 476 | 93 | 328 | 40 | 461 | 38 | 286 | 44 | 368 | 1544 |
| % App. Total | 13 | 63.2 | 23.8 | | 19.5 | 70.2 | 10.3 | | 20.2 | 71.1 | 8.7 | | 10.3 | 77.7 | 12 | | |
| PHF | .861 | .858 | .679 | .830 | .684 | .928 | .721 | .888 | .727 | .845 | .588 | .789 | .731 | .894 | .688 | .939 | .873 |

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103rd St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 2

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 1 | 12 | 1 | 14 | 1 | 2 | 1 | 4 | 1 | 4 | 1 | 6 | 25 |
| 07:15 AM | 0 | 1 | 1 | 2 | 0 | 7 | 1 | 8 | 1 | 2 | 0 | 3 | 0 | 4 | 1 | 5 | 18 |
| 07:30 AM | 2 | 1 | 0 | 3 | 1 | 2 | 5 | 8 | 1 | 2 | 0 | 3 | 0 | 6 | 1 | 7 | 21 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 15 |
| Total | 2 | 4 | 1 | 7 | 2 | 25 | 7 | 34 | 3 | 11 | 1 | 15 | 1 | 19 | 3 | 23 | 79 |
| 08:00 AM | 0 | 3 | 0 | 3 | 0 | 5 | 1 | 6 | 0 | 3 | 0 | 3 | 0 | 3 | 2 | 5 | 17 |
| 08:15 AM | 1 | 3 | 0 | 4 | 4 | 3 | 3 | 10 | 1 | 1 | 0 | 2 | 0 | 8 | 1 | 9 | 25 |
| 08:30 AM | 0 | 2 | 0 | 2 | 1 | 3 | 1 | 5 | 0 | 2 | 0 | 2 | 1 | 5 | 0 | 6 | 15 |
| 08:45 AM | 0 | 5 | 1 | 6 | 0 | 4 | 1 | 5 | 1 | 12 | 0 | 13 | 1 | 3 | 0 | 4 | 28 |
| Total | 1 | 13 | 1 | 15 | 5 | 15 | 6 | 26 | 2 | 18 | 0 | 20 | 2 | 19 | 3 | 24 | 85 |
| Grand Total | 3 | 17 | 2 | 22 | 7 | 40 | 13 | 60 | 5 | 29 | 1 | 35 | 3 | 38 | 6 | 47 | 164 |
| Apprch % | 13.6 | 77.3 | 9.1 | | 11.7 | 66.7 | 21.7 | | 14.3 | 82.9 | 2.9 | | 6.4 | 80.9 | 12.8 | | |
| Total % | 1.8 | 10.4 | 1.2 | 13.4 | 4.3 | 24.4 | 7.9 | 36.6 | 3 | 17.7 | 0.6 | 21.3 | 1.8 | 23.2 | 3.7 | 28.7 | |

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103rd St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 3

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 5 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 7 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 0 | 0 | 0 | 2 | 7 | 5 | 14 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 17 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:45 AM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 11 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 13 |
| Grand Total | 0 | 0 | 0 | 0 | 4 | 16 | 5 | 25 | 1 | 1 | 1 | 3 | 0 | 1 | 1 | 2 | 30 |
| Apprch % | 0 | 0 | 0 | | 16 | 64 | 20 | | 33.3 | 33.3 | 33.3 | | 0 | 50 | 50 | | |
| Total % | 0 | 0 | 0 | 0 | 13.3 | 53.3 | 16.7 | 83.3 | 3.3 | 3.3 | 3.3 | 10 | 0 | 3.3 | 3.3 | 6.7 | |

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103rd St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/8/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 9 |
| 07:15 AM | 0 | 2 | 2 | 0 | 8 | 8 | 0 | 1 | 1 | 0 | 0 | 0 | 11 |
| 07:30 AM | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 4 | 4 | 12 |
| 07:45 AM | 2 | 2 | 4 | 2 | 6 | 8 | 0 | 6 | 6 | 0 | 0 | 0 | 18 |
| Total | 2 | 11 | 13 | 2 | 19 | 21 | 0 | 10 | 10 | 0 | 6 | 6 | 50 |
| 08:00 AM | 0 | 6 | 6 | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 1 | 1 | 16 |
| 08:15 AM | 0 | 8 | 8 | 0 | 18 | 18 | 0 | 6 | 6 | 0 | 0 | 0 | 32 |
| 08:30 AM | 0 | 11 | 11 | 0 | 5 | 5 | 0 | 10 | 10 | 0 | 11 | 11 | 37 |
| 08:45 AM | 0 | 18 | 18 | 0 | 11 | 11 | 0 | 10 | 10 | 0 | 1 | 1 | 40 |
| Total | 0 | 43 | 43 | 0 | 40 | 40 | 0 | 29 | 29 | 0 | 13 | 13 | 125 |
| Grand Total | 2 | 54 | 56 | 2 | 59 | 61 | 0 | 39 | 39 | 0 | 19 | 19 | 175 |
| Apprch % | 3.6 | 96.4 | | 3.3 | 96.7 | | 0 | 100 | | 0 | 100 | | |
| Total % | 1.1 | 30.9 | 32 | 1.1 | 33.7 | 34.9 | 0 | 22.3 | 22.3 | 0 | 10.9 | 10.9 | |

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103rd St and Cottage Grove Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/8/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 18 | 70 | 21 | 109 | 35 | 145 | 24 | 204 | 11 | 29 | 18 | 58 | 18 | 69 | 14 | 101 | 472 |
| 04:15 PM | 11 | 46 | 24 | 81 | 18 | 83 | 13 | 114 | 19 | 38 | 15 | 72 | 15 | 72 | 19 | 106 | 373 |
| 04:30 PM | 12 | 65 | 27 | 104 | 29 | 118 | 14 | 161 | 15 | 40 | 7 | 62 | 17 | 88 | 9 | 114 | 441 |
| 04:45 PM | 18 | 76 | 33 | 127 | 28 | 72 | 20 | 120 | 12 | 31 | 9 | 52 | 15 | 84 | 18 | 117 | 416 |
| Total | 59 | 257 | 105 | 421 | 110 | 418 | 71 | 599 | 57 | 138 | 49 | 244 | 65 | 313 | 60 | 438 | 1702 |
| 05:00 PM | 21 | 62 | 22 | 105 | 26 | 101 | 29 | 156 | 15 | 29 | 10 | 54 | 13 | 79 | 15 | 107 | 422 |
| 05:15 PM | 11 | 86 | 28 | 125 | 22 | 97 | 18 | 137 | 10 | 44 | 21 | 75 | 18 | 82 | 14 | 114 | 451 |
| 05:30 PM | 10 | 79 | 23 | 112 | 17 | 89 | 13 | 119 | 8 | 25 | 13 | 46 | 10 | 87 | 18 | 115 | 392 |
| 05:45 PM | 21 | 56 | 25 | 102 | 26 | 104 | 30 | 160 | 12 | 24 | 7 | 43 | 12 | 79 | 15 | 106 | 411 |
| Total | 63 | 283 | 98 | 444 | 91 | 391 | 90 | 572 | 45 | 122 | 51 | 218 | 53 | 327 | 62 | 442 | 1676 |
| Grand Total | 122 | 540 | 203 | 865 | 201 | 809 | 161 | 1171 | 102 | 260 | 100 | 462 | 118 | 640 | 122 | 880 | 3378 |
| Apprch % | 14.1 | 62.4 | 23.5 | | 17.2 | 69.1 | 13.7 | | 22.1 | 56.3 | 21.6 | | 13.4 | 72.7 | 13.9 | | |
| Total % | 3.6 | 16 | 6 | 25.6 | 6 | 23.9 | 4.8 | 34.7 | 3 | 7.7 | 3 | 13.7 | 3.5 | 18.9 | 3.6 | 26.1 | |
| PC | 120 | 522 | 200 | 842 | 200 | 788 | 155 | 1143 | 101 | 252 | 99 | 452 | 117 | 619 | 122 | 858 | 3295 |
| % PC | 98.4 | 96.7 | 98.5 | 97.3 | 99.5 | 97.4 | 96.3 | 97.6 | 99 | 96.9 | 99 | 97.8 | 99.2 | 96.7 | 100 | 97.5 | 97.5 |
| SU | 2 | 18 | 3 | 23 | 1 | 13 | 5 | 19 | 1 | 7 | 1 | 9 | 1 | 21 | 0 | 22 | 73 |
| % SU | 1.6 | 3.3 | 1.5 | 2.7 | 0.5 | 1.6 | 3.1 | 1.6 | 1 | 2.7 | 1 | 1.9 | 0.8 | 3.3 | 0 | 2.5 | 2.2 |
| MU | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| % MU | 0 | 0 | 0 | 0 | 0 | 1 | 0.6 | 0.8 | 0 | 0.4 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.3 |

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 7 | 44 | 21 | 72 | 25 | 90 | 17 | 132 | 32 | 97 | 17 | 146 | 12 | 65 | 15 | 92 | 442 |
| 08:00 AM | 6 | 39 | 11 | 56 | 17 | 76 | 9 | 102 | 25 | 78 | 12 | 115 | 8 | 74 | 16 | 98 | 371 |
| 08:15 AM | 9 | 30 | 13 | 52 | 34 | 87 | 13 | 134 | 14 | 60 | 7 | 81 | 5 | 67 | 9 | 81 | 348 |
| 08:30 AM | 9 | 38 | 12 | 59 | 17 | 81 | 10 | 108 | 22 | 93 | 4 | 119 | 13 | 80 | 4 | 97 | 383 |
| Total Volume | 31 | 151 | 57 | 239 | 93 | 334 | 49 | 476 | 93 | 328 | 40 | 461 | 38 | 286 | 44 | 368 | 1544 |
| % App. Total | 13 | 63.2 | 23.8 | | 19.5 | 70.2 | 10.3 | | 20.2 | 71.1 | 8.7 | | 10.3 | 77.7 | 12 | | |
| PHF | .861 | .858 | .679 | .830 | .684 | .928 | .721 | .888 | .727 | .845 | .588 | .789 | .731 | .894 | .688 | .939 | .873 |

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103rd St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 6

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 0 | 3 | 0 | 2 | 3 | 5 | 0 | 1 | 1 | 2 | 1 | 4 | 0 | 5 | 15 |
| 04:15 PM | 0 | 4 | 0 | 4 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 11 |
| 04:30 PM | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 3 | 10 |
| 04:45 PM | 0 | 2 | 1 | 3 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 8 |
| Total | 0 | 12 | 1 | 13 | 1 | 7 | 4 | 12 | 1 | 6 | 1 | 8 | 1 | 10 | 0 | 11 | 44 |
| 05:00 PM | 0 | 2 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 8 |
| 05:15 PM | 2 | 2 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 05:45 PM | 0 | 2 | 2 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 10 |
| Total | 2 | 6 | 2 | 10 | 0 | 6 | 1 | 7 | 0 | 1 | 0 | 1 | 0 | 11 | 0 | 11 | 29 |
| Grand Total | 2 | 18 | 3 | 23 | 1 | 13 | 5 | 19 | 1 | 7 | 1 | 9 | 1 | 21 | 0 | 22 | 73 |
| Apprch % | 8.7 | 78.3 | 13 | | 5.3 | 68.4 | 26.3 | | 11.1 | 77.8 | 11.1 | | 4.5 | 95.5 | 0 | | |
| Total % | 2.7 | 24.7 | 4.1 | 31.5 | 1.4 | 17.8 | 6.8 | 26 | 1.4 | 9.6 | 1.4 | 12.3 | 1.4 | 28.8 | 0 | 30.1 | |

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103rd St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 7

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 103rd St From East | | | | Cottage Grove Ave From South | | | | 103rd St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 6 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| Apprch % | 0 | 0 | 0 | | 0 | 88.9 | 11.1 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 80 | 10 | 90 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | |

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103rd St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/8/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 1 | 46 | 47 | 0 | 20 | 20 | 0 | 65 | 65 | 0 | 13 | 13 | 145 |
| 04:15 PM | 0 | 8 | 8 | 1 | 7 | 8 | 3 | 15 | 18 | 0 | 1 | 1 | 35 |
| 04:30 PM | 0 | 9 | 9 | 0 | 5 | 5 | 2 | 11 | 13 | 0 | 0 | 0 | 27 |
| 04:45 PM | 2 | 14 | 16 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 2 | 2 | 26 |
| Total | 3 | 77 | 80 | 1 | 35 | 36 | 5 | 96 | 101 | 0 | 16 | 16 | 233 |
| 05:00 PM | 0 | 11 | 11 | 0 | 5 | 5 | 0 | 11 | 11 | 0 | 0 | 0 | 27 |
| 05:15 PM | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 0 | 0 | 11 |
| 05:30 PM | 1 | 6 | 7 | 0 | 10 | 10 | 0 | 6 | 6 | 0 | 1 | 1 | 24 |
| 05:45 PM | 2 | 2 | 4 | 0 | 3 | 3 | 0 | 8 | 8 | 0 | 0 | 0 | 15 |
| Total | 3 | 23 | 26 | 0 | 20 | 20 | 0 | 30 | 30 | 0 | 1 | 1 | 77 |
| Grand Total | 6 | 100 | 106 | 1 | 55 | 56 | 5 | 126 | 131 | 0 | 17 | 17 | 310 |
| Apprch % | 5.7 | 94.3 | | 1.8 | 98.2 | | 3.8 | 96.2 | | 0 | 100 | | |
| Total % | 1.9 | 32.3 | 34.2 | 0.3 | 17.7 | 18.1 | 1.6 | 40.6 | 42.3 | 0 | 5.5 | 5.5 | |

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103rd St and Halsted St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/2/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 75 | 10 | 91 | 13 | 42 | 13 | 68 | 10 | 270 | 21 | 301 | 10 | 22 | 17 | 49 | 509 |
| 07:15 AM | 17 | 80 | 15 | 112 | 24 | 60 | 11 | 95 | 16 | 244 | 24 | 284 | 11 | 43 | 21 | 75 | 566 |
| 07:30 AM | 15 | 91 | 21 | 127 | 28 | 53 | 8 | 89 | 17 | 357 | 34 | 408 | 20 | 58 | 18 | 96 | 720 |
| 07:45 AM | 25 | 114 | 10 | 149 | 24 | 75 | 16 | 115 | 30 | 384 | 39 | 453 | 19 | 69 | 27 | 115 | 832 |
| Total | 63 | 360 | 56 | 479 | 89 | 230 | 48 | 367 | 73 | 1255 | 118 | 1446 | 60 | 192 | 83 | 335 | 2627 |
| 08:00 AM | 23 | 109 | 15 | 147 | 27 | 66 | 13 | 106 | 33 | 385 | 28 | 446 | 34 | 82 | 29 | 145 | 844 |
| 08:15 AM | 30 | 131 | 19 | 180 | 27 | 64 | 26 | 117 | 28 | 309 | 24 | 361 | 22 | 76 | 22 | 120 | 778 |
| 08:30 AM | 17 | 120 | 20 | 157 | 24 | 63 | 12 | 99 | 21 | 266 | 22 | 309 | 19 | 85 | 16 | 120 | 685 |
| 08:45 AM | 19 | 111 | 38 | 168 | 14 | 52 | 13 | 79 | 21 | 233 | 20 | 274 | 29 | 53 | 17 | 99 | 620 |
| Total | 89 | 471 | 92 | 652 | 92 | 245 | 64 | 401 | 103 | 1193 | 94 | 1390 | 104 | 296 | 84 | 484 | 2927 |
| Grand Total | 152 | 831 | 148 | 1131 | 181 | 475 | 112 | 768 | 176 | 2448 | 212 | 2836 | 164 | 488 | 167 | 819 | 5554 |
| Apprch % | 13.4 | 73.5 | 13.1 | | 23.6 | 61.8 | 14.6 | | 6.2 | 86.3 | 7.5 | | 20 | 59.6 | 20.4 | | |
| Total % | 2.7 | 15 | 2.7 | 20.4 | 3.3 | 8.6 | 2 | 13.8 | 3.2 | 44.1 | 3.8 | 51.1 | 3 | 8.8 | 3 | 14.7 | |
| PC | 145 | 759 | 138 | 1042 | 173 | 444 | 111 | 728 | 169 | 2344 | 201 | 2714 | 156 | 465 | 158 | 779 | 5263 |
| % PC | 95.4 | 91.3 | 93.2 | 92.1 | 95.6 | 93.5 | 99.1 | 94.8 | 96 | 95.8 | 94.8 | 95.7 | 95.1 | 95.3 | 94.6 | 95.1 | 94.8 |
| SU | 7 | 67 | 7 | 81 | 7 | 30 | 1 | 38 | 5 | 97 | 11 | 113 | 7 | 23 | 9 | 39 | 271 |
| % SU | 4.6 | 8.1 | 4.7 | 7.2 | 3.9 | 6.3 | 0.9 | 4.9 | 2.8 | 4 | 5.2 | 4 | 4.3 | 4.7 | 5.4 | 4.8 | 4.9 |
| MU | 0 | 5 | 3 | 8 | 1 | 1 | 0 | 2 | 2 | 7 | 0 | 9 | 1 | 0 | 0 | 1 | 20 |
| % MU | 0 | 0.6 | 2 | 0.7 | 0.6 | 0.2 | 0 | 0.3 | 1.1 | 0.3 | 0 | 0.3 | 0.6 | 0 | 0 | 0.1 | 0.4 |

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|--|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 15 | 91 | 21 | 127 | 28 | 53 | 8 | 89 | 17 | 357 | 34 | 408 | 20 | 58 | 18 | 96 | 720 |
| 07:45 AM | 25 | 114 | 10 | 149 | 24 | 75 | 16 | 115 | 30 | 384 | 39 | 453 | 19 | 69 | 27 | 115 | 832 |
| 08:00 AM | 23 | 109 | 15 | 147 | 27 | 66 | 13 | 106 | 33 | 385 | 28 | 446 | 34 | 82 | 29 | 145 | 844 |
| 08:15 AM | 30 | 131 | 19 | 180 | 27 | 64 | 26 | 117 | 28 | 309 | 24 | 361 | 22 | 76 | 22 | 120 | 778 |
| Total Volume | 93 | 445 | 65 | 603 | 106 | 258 | 63 | 427 | 108 | 1435 | 125 | 1668 | 95 | 285 | 96 | 476 | 3174 |
| % App. Total | 15.4 | 73.8 | 10.8 | | 24.8 | 60.4 | 14.8 | | 6.5 | 86 | 7.5 | | 20 | 59.9 | 20.2 | | |
| PHF | .775 | .849 | .774 | .838 | .946 | .860 | .606 | .912 | .818 | .932 | .801 | .921 | .699 | .869 | .828 | .821 | .940 |

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103rd St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/2/2012

Page No : 2

Groups Printed- SU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 13 | 0 | 14 | 1 | 3 | 0 | 4 | 0 | 20 | 2 | 22 | 0 | 1 | 0 | 1 | 41 |
| 07:15 AM | 0 | 6 | 1 | 7 | 2 | 4 | 0 | 6 | 0 | 14 | 1 | 15 | 2 | 3 | 1 | 6 | 34 |
| 07:30 AM | 1 | 6 | 2 | 9 | 2 | 1 | 0 | 3 | 0 | 14 | 0 | 14 | 1 | 2 | 0 | 3 | 29 |
| 07:45 AM | 2 | 8 | 1 | 11 | 0 | 6 | 0 | 6 | 2 | 13 | 4 | 19 | 0 | 4 | 2 | 6 | 42 |
| Total | 4 | 33 | 4 | 41 | 5 | 14 | 0 | 19 | 2 | 61 | 7 | 70 | 3 | 10 | 3 | 16 | 146 |
| 08:00 AM | 1 | 5 | 0 | 6 | 1 | 4 | 0 | 5 | 0 | 10 | 0 | 10 | 1 | 2 | 2 | 5 | 26 |
| 08:15 AM | 0 | 12 | 0 | 12 | 1 | 4 | 0 | 5 | 1 | 7 | 3 | 11 | 1 | 3 | 2 | 6 | 34 |
| 08:30 AM | 1 | 10 | 0 | 11 | 0 | 5 | 1 | 6 | 2 | 8 | 0 | 10 | 2 | 3 | 2 | 7 | 34 |
| 08:45 AM | 1 | 7 | 3 | 11 | 0 | 3 | 0 | 3 | 0 | 11 | 1 | 12 | 0 | 5 | 0 | 5 | 31 |
| Total | 3 | 34 | 3 | 40 | 2 | 16 | 1 | 19 | 3 | 36 | 4 | 43 | 4 | 13 | 6 | 23 | 125 |
| Grand Total | 7 | 67 | 7 | 81 | 7 | 30 | 1 | 38 | 5 | 97 | 11 | 113 | 7 | 23 | 9 | 39 | 271 |
| Apprch % | 8.6 | 82.7 | 8.6 | | 18.4 | 78.9 | 2.6 | | 4.4 | 85.8 | 9.7 | | 17.9 | 59 | 23.1 | | |
| Total % | 2.6 | 24.7 | 2.6 | 29.9 | 2.6 | 11.1 | 0.4 | 14 | 1.8 | 35.8 | 4.1 | 41.7 | 2.6 | 8.5 | 3.3 | 14.4 | |

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103rd St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/2/2012

Page No : 3

Groups Printed- MU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 07:30 AM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 3 | 1 | 4 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 9 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 08:30 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 4 |
| Total | 0 | 2 | 2 | 4 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 5 | 1 | 0 | 0 | 1 | 11 |
| Grand Total | 0 | 5 | 3 | 8 | 1 | 1 | 0 | 2 | 2 | 7 | 0 | 9 | 1 | 0 | 0 | 1 | 20 |
| Apprch % | 0 | 62.5 | 37.5 | | 50 | 50 | 0 | | 22.2 | 77.8 | 0 | | 100 | 0 | 0 | | |
| Total % | 0 | 25 | 15 | 40 | 5 | 5 | 0 | 10 | 10 | 35 | 0 | 45 | 5 | 0 | 0 | 5 | |

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103rd St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 103rd St Crossing East Leg | | | Halsted St Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 10 | 10 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 14 |
| 07:15 AM | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 20 |
| 07:30 AM | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 4 | 4 | 30 |
| 07:45 AM | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 13 | 13 | 0 | 8 | 8 | 30 |
| Total | 0 | 39 | 39 | 0 | 5 | 5 | 0 | 37 | 37 | 0 | 13 | 13 | 94 |
| 08:00 AM | 0 | 22 | 22 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 5 | 5 | 35 |
| 08:15 AM | 0 | 3 | 3 | 1 | 2 | 3 | 0 | 6 | 6 | 0 | 3 | 3 | 15 |
| 08:30 AM | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 6 | 6 | 0 | 2 | 2 | 20 |
| 08:45 AM | 0 | 3 | 3 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 5 | 5 | 16 |
| Total | 0 | 35 | 35 | 1 | 14 | 15 | 0 | 21 | 21 | 0 | 15 | 15 | 86 |
| Grand Total | 0 | 74 | 74 | 1 | 19 | 20 | 0 | 58 | 58 | 0 | 28 | 28 | 180 |
| Apprch % | 0 | 100 | | 5 | 95 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 41.1 | 41.1 | 0.6 | 10.6 | 11.1 | 0 | 32.2 | 32.2 | 0 | 15.6 | 15.6 | |

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103rd St and Halsted St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/2/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 26 | 149 | 33 | 208 | 18 | 54 | 22 | 94 | 17 | 166 | 19 | 202 | 30 | 62 | 18 | 110 | 614 |
| 04:15 PM | 43 | 126 | 35 | 204 | 25 | 58 | 23 | 106 | 27 | 133 | 23 | 183 | 45 | 96 | 21 | 162 | 655 |
| 04:30 PM | 16 | 194 | 19 | 229 | 20 | 66 | 17 | 103 | 21 | 155 | 24 | 200 | 32 | 77 | 16 | 125 | 657 |
| 04:45 PM | 15 | 166 | 30 | 211 | 22 | 64 | 29 | 115 | 21 | 150 | 19 | 190 | 24 | 56 | 20 | 100 | 616 |
| Total | 100 | 635 | 117 | 852 | 85 | 242 | 91 | 418 | 86 | 604 | 85 | 775 | 131 | 291 | 75 | 497 | 2542 |
| 05:00 PM | 20 | 150 | 32 | 202 | 27 | 75 | 26 | 128 | 18 | 141 | 27 | 186 | 45 | 86 | 16 | 147 | 663 |
| 05:15 PM | 28 | 213 | 33 | 274 | 29 | 75 | 32 | 136 | 14 | 150 | 24 | 188 | 31 | 71 | 19 | 121 | 719 |
| 05:30 PM | 13 | 184 | 32 | 229 | 25 | 69 | 20 | 114 | 22 | 133 | 19 | 174 | 32 | 69 | 20 | 121 | 638 |
| 05:45 PM | 29 | 176 | 34 | 239 | 29 | 51 | 25 | 105 | 22 | 152 | 25 | 199 | 29 | 68 | 9 | 106 | 649 |
| Total | 90 | 723 | 131 | 944 | 110 | 270 | 103 | 483 | 76 | 576 | 95 | 747 | 137 | 294 | 64 | 495 | 2669 |
| Grand Total | 190 | 1358 | 248 | 1796 | 195 | 512 | 194 | 901 | 162 | 1180 | 180 | 1522 | 268 | 585 | 139 | 992 | 5211 |
| Apprch % | 10.6 | 75.6 | 13.8 | | 21.6 | 56.8 | 21.5 | | 10.6 | 77.5 | 11.8 | | 27 | 59 | 14 | | |
| Total % | 3.6 | 26.1 | 4.8 | 34.5 | 3.7 | 9.8 | 3.7 | 17.3 | 3.1 | 22.6 | 3.5 | 29.2 | 5.1 | 11.2 | 2.7 | 19 | |
| PC | 185 | 1300 | 245 | 1730 | 190 | 493 | 190 | 873 | 159 | 1121 | 174 | 1454 | 265 | 571 | 136 | 972 | 5029 |
| % PC | 97.4 | 95.7 | 98.8 | 96.3 | 97.4 | 96.3 | 97.9 | 96.9 | 98.1 | 95 | 96.7 | 95.5 | 98.9 | 97.6 | 97.8 | 98 | 96.5 |
| SU | 5 | 57 | 2 | 64 | 5 | 19 | 4 | 28 | 3 | 58 | 6 | 67 | 3 | 13 | 3 | 19 | 178 |
| % SU | 2.6 | 4.2 | 0.8 | 3.6 | 2.6 | 3.7 | 2.1 | 3.1 | 1.9 | 4.9 | 3.3 | 4.4 | 1.1 | 2.2 | 2.2 | 1.9 | 3.4 |
| MU | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 4 |
| % MU | 0 | 0.1 | 0.4 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.1 | 0.1 |

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|--|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 15 | 91 | 21 | 127 | 28 | 53 | 8 | 89 | 17 | 357 | 34 | 408 | 20 | 58 | 18 | 96 | 720 |
| 07:45 AM | 25 | 114 | 10 | 149 | 24 | 75 | 16 | 115 | 30 | 384 | 39 | 453 | 19 | 69 | 27 | 115 | 832 |
| 08:00 AM | 23 | 109 | 15 | 147 | 27 | 66 | 13 | 106 | 33 | 385 | 28 | 446 | 34 | 82 | 29 | 145 | 844 |
| 08:15 AM | 30 | 131 | 19 | 180 | 27 | 64 | 26 | 117 | 28 | 309 | 24 | 361 | 22 | 76 | 22 | 120 | 778 |
| Total Volume | 93 | 445 | 65 | 603 | 106 | 258 | 63 | 427 | 108 | 1435 | 125 | 1668 | 95 | 285 | 96 | 476 | 3174 |
| % App. Total | 15.4 | 73.8 | 10.8 | | 24.8 | 60.4 | 14.8 | | 6.5 | 86 | 7.5 | | 20 | 59.9 | 20.2 | | |
| PHF | .775 | .849 | .774 | .838 | .946 | .860 | .606 | .912 | .818 | .932 | .801 | .921 | .699 | .869 | .828 | .821 | .940 |

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103rd St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/2/2012

Page No : 6

Groups Printed- SU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 6 | 0 | 6 | 1 | 3 | 0 | 4 | 1 | 9 | 1 | 11 | 0 | 3 | 1 | 4 | 25 |
| 04:15 PM | 1 | 9 | 0 | 10 | 1 | 5 | 1 | 7 | 1 | 9 | 1 | 11 | 0 | 1 | 0 | 1 | 29 |
| 04:30 PM | 1 | 8 | 0 | 9 | 0 | 1 | 1 | 2 | 0 | 7 | 0 | 7 | 0 | 2 | 0 | 2 | 20 |
| 04:45 PM | 0 | 5 | 1 | 6 | 1 | 3 | 0 | 4 | 0 | 7 | 1 | 8 | 0 | 1 | 1 | 2 | 20 |
| Total | 2 | 28 | 1 | 31 | 3 | 12 | 2 | 17 | 2 | 32 | 3 | 37 | 0 | 7 | 2 | 9 | 94 |
| 05:00 PM | 1 | 7 | 0 | 8 | 2 | 2 | 0 | 4 | 0 | 6 | 2 | 8 | 1 | 1 | 0 | 2 | 22 |
| 05:15 PM | 0 | 9 | 0 | 9 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 1 | 2 | 1 | 4 | 19 |
| 05:30 PM | 1 | 8 | 1 | 10 | 0 | 1 | 1 | 2 | 1 | 7 | 1 | 9 | 0 | 1 | 0 | 1 | 22 |
| 05:45 PM | 1 | 5 | 0 | 6 | 0 | 3 | 1 | 4 | 0 | 8 | 0 | 8 | 1 | 2 | 0 | 3 | 21 |
| Total | 3 | 29 | 1 | 33 | 2 | 7 | 2 | 11 | 1 | 26 | 3 | 30 | 3 | 6 | 1 | 10 | 84 |
| Grand Total | 5 | 57 | 2 | 64 | 5 | 19 | 4 | 28 | 3 | 58 | 6 | 67 | 3 | 13 | 3 | 19 | 178 |
| Apprch % | 7.8 | 89.1 | 3.1 | | 17.9 | 67.9 | 14.3 | | 4.5 | 86.6 | 9 | | 15.8 | 68.4 | 15.8 | | |
| Total % | 2.8 | 32 | 1.1 | 36 | 2.8 | 10.7 | 2.2 | 15.7 | 1.7 | 32.6 | 3.4 | 37.6 | 1.7 | 7.3 | 1.7 | 10.7 | |

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103rd St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/2/2012

Page No : 7

Groups Printed- MU

| | Halsted St From North | | | | 103rd St From East | | | | Halsted St From South | | | | 103rd St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Grand Total | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 4 |
| Apprch % | 0 | 50 | 50 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 25 | 25 | 50 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 | 0 | 25 | 0 | 25 | |

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103rd St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 103rd St Crossing East Leg | | | Halsted St Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 9 | 9 | 0 | 7 | 7 | 22 |
| 04:15 PM | 0 | 12 | 12 | 1 | 3 | 4 | 0 | 12 | 12 | 0 | 4 | 4 | 32 |
| 04:30 PM | 0 | 7 | 7 | 1 | 11 | 12 | 0 | 4 | 4 | 0 | 14 | 14 | 37 |
| 04:45 PM | 1 | 2 | 3 | 1 | 6 | 7 | 0 | 2 | 2 | 0 | 8 | 8 | 20 |
| Total | 1 | 26 | 27 | 3 | 21 | 24 | 0 | 27 | 27 | 0 | 33 | 33 | 111 |
| 05:00 PM | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 14 | 14 | 0 | 5 | 5 | 27 |
| 05:15 PM | 1 | 8 | 9 | 0 | 3 | 3 | 0 | 9 | 9 | 0 | 5 | 5 | 26 |
| 05:30 PM | 0 | 2 | 2 | 0 | 9 | 9 | 0 | 14 | 14 | 0 | 12 | 12 | 37 |
| 05:45 PM | 0 | 12 | 12 | 0 | 6 | 6 | 0 | 8 | 8 | 0 | 14 | 14 | 40 |
| Total | 1 | 24 | 25 | 0 | 24 | 24 | 0 | 45 | 45 | 0 | 36 | 36 | 130 |
| Grand Total | 2 | 50 | 52 | 3 | 45 | 48 | 0 | 72 | 72 | 0 | 69 | 69 | 241 |
| Apprch % | 3.8 | 96.2 | | 6.2 | 93.8 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0.8 | 20.7 | 21.6 | 1.2 | 18.7 | 19.9 | 0 | 29.9 | 29.9 | 0 | 28.6 | 28.6 | |

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103rd St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/7/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 10 | 3 | 19 | 5 | 70 | 3 | 78 | 1 | 41 | 12 | 54 | 5 | 43 | 12 | 60 | 211 |
| 07:15 AM | 13 | 21 | 2 | 36 | 9 | 67 | 3 | 79 | 6 | 84 | 9 | 99 | 4 | 39 | 25 | 68 | 282 |
| 07:30 AM | 13 | 22 | 9 | 44 | 1 | 76 | 3 | 80 | 4 | 81 | 12 | 97 | 7 | 57 | 16 | 80 | 301 |
| 07:45 AM | 12 | 56 | 4 | 72 | 18 | 66 | 4 | 88 | 7 | 95 | 17 | 119 | 12 | 48 | 16 | 76 | 355 |
| Total | 44 | 109 | 18 | 171 | 33 | 279 | 13 | 325 | 18 | 301 | 50 | 369 | 28 | 187 | 69 | 284 | 1149 |
| 08:00 AM | 8 | 38 | 13 | 59 | 8 | 69 | 8 | 85 | 6 | 102 | 10 | 118 | 5 | 72 | 30 | 107 | 369 |
| 08:15 AM | 3 | 45 | 8 | 56 | 16 | 81 | 6 | 103 | 5 | 66 | 15 | 86 | 5 | 75 | 22 | 102 | 347 |
| 08:30 AM | 14 | 49 | 16 | 79 | 7 | 99 | 8 | 114 | 4 | 80 | 15 | 99 | 3 | 76 | 25 | 104 | 396 |
| 08:45 AM | 9 | 46 | 13 | 68 | 8 | 88 | 7 | 103 | 5 | 86 | 11 | 102 | 10 | 73 | 22 | 105 | 378 |
| Total | 34 | 178 | 50 | 262 | 39 | 337 | 29 | 405 | 20 | 334 | 51 | 405 | 23 | 296 | 99 | 418 | 1490 |
| Grand Total | 78 | 287 | 68 | 433 | 72 | 616 | 42 | 730 | 38 | 635 | 101 | 774 | 51 | 483 | 168 | 702 | 2639 |
| Apprch % | 18 | 66.3 | 15.7 | | 9.9 | 84.4 | 5.8 | | 4.9 | 82 | 13 | | 7.3 | 68.8 | 23.9 | | |
| Total % | 3 | 10.9 | 2.6 | 16.4 | 2.7 | 23.3 | 1.6 | 27.7 | 1.4 | 24.1 | 3.8 | 29.3 | 1.9 | 18.3 | 6.4 | 26.6 | |
| PC | 76 | 268 | 64 | 408 | 70 | 570 | 42 | 682 | 37 | 616 | 99 | 752 | 48 | 444 | 163 | 655 | 2497 |
| % PC | 97.4 | 93.4 | 94.1 | 94.2 | 97.2 | 92.5 | 100 | 93.4 | 97.4 | 97 | 98 | 97.2 | 94.1 | 91.9 | 97 | 93.3 | 94.6 |
| SU | 2 | 17 | 4 | 23 | 2 | 41 | 0 | 43 | 1 | 19 | 1 | 21 | 3 | 37 | 5 | 45 | 132 |
| % SU | 2.6 | 5.9 | 5.9 | 5.3 | 2.8 | 6.7 | 0 | 5.9 | 2.6 | 3 | 1 | 2.7 | 5.9 | 7.7 | 3 | 6.4 | 5 |
| MU | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 10 |
| % MU | 0 | 0.7 | 0 | 0.5 | 0 | 0.8 | 0 | 0.7 | 0 | 0 | 1 | 0.1 | 0 | 0.4 | 0 | 0.3 | 0.4 |

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 38 | 13 | 59 | 8 | 69 | 8 | 85 | 6 | 102 | 10 | 118 | 5 | 72 | 30 | 107 | 369 |
| 08:15 AM | 3 | 45 | 8 | 56 | 16 | 81 | 6 | 103 | 5 | 66 | 15 | 86 | 5 | 75 | 22 | 102 | 347 |
| 08:30 AM | 14 | 49 | 16 | 79 | 7 | 99 | 8 | 114 | 4 | 80 | 15 | 99 | 3 | 76 | 25 | 104 | 396 |
| 08:45 AM | 9 | 46 | 13 | 68 | 8 | 88 | 7 | 103 | 5 | 86 | 11 | 102 | 10 | 73 | 22 | 105 | 378 |
| Total Volume | 34 | 178 | 50 | 262 | 39 | 337 | 29 | 405 | 20 | 334 | 51 | 405 | 23 | 296 | 99 | 418 | 1490 |
| % App. Total | 13 | 67.9 | 19.1 | | 9.6 | 83.2 | 7.2 | | 4.9 | 82.5 | 12.6 | | 5.5 | 70.8 | 23.7 | | |
| PHF | .607 | .908 | .781 | .829 | .609 | .851 | .906 | .888 | .833 | .819 | .850 | .858 | .575 | .974 | .825 | .977 | .941 |

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103rd St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 7 | 0 | 3 | 0 | 3 | 0 | 4 | 1 | 5 | 17 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 3 | 1 | 4 | 11 |
| 07:30 AM | 2 | 3 | 2 | 7 | 0 | 6 | 0 | 6 | 0 | 4 | 0 | 4 | 0 | 3 | 1 | 4 | 21 |
| 07:45 AM | 0 | 4 | 0 | 4 | 2 | 4 | 0 | 6 | 0 | 1 | 0 | 1 | 2 | 3 | 1 | 6 | 17 |
| Total | 2 | 10 | 2 | 14 | 2 | 21 | 0 | 23 | 1 | 9 | 0 | 10 | 2 | 13 | 4 | 19 | 66 |
| 08:00 AM | 0 | 1 | 2 | 3 | 0 | 3 | 0 | 3 | 0 | 5 | 0 | 5 | 1 | 9 | 1 | 11 | 22 |
| 08:15 AM | 0 | 2 | 0 | 2 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 15 |
| 08:30 AM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 6 | 0 | 6 | 12 |
| 08:45 AM | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 7 | 0 | 3 | 0 | 3 | 0 | 5 | 0 | 5 | 17 |
| Total | 0 | 7 | 2 | 9 | 0 | 20 | 0 | 20 | 0 | 10 | 1 | 11 | 1 | 24 | 1 | 26 | 66 |
| Grand Total | 2 | 17 | 4 | 23 | 2 | 41 | 0 | 43 | 1 | 19 | 1 | 21 | 3 | 37 | 5 | 45 | 132 |
| Apprch % | 8.7 | 73.9 | 17.4 | | 4.7 | 95.3 | 0 | | 4.8 | 90.5 | 4.8 | | 6.7 | 82.2 | 11.1 | | |
| Total % | 1.5 | 12.9 | 3 | 17.4 | 1.5 | 31.1 | 0 | 32.6 | 0.8 | 14.4 | 0.8 | 15.9 | 2.3 | 28 | 3.8 | 34.1 | |

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103rd St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| 08:00 AM | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 |
| Grand Total | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 10 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | 0 | 100 | 0 | | |
| Total % | 0 | 20 | 0 | 20 | 0 | 50 | 0 | 50 | 0 | 0 | 10 | 10 | 0 | 20 | 0 | 20 | |

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103rd St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/7/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 103rd St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 2 | 2 | 8 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 4 | 4 | 9 |
| 07:30 AM | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 3 | 3 | 9 |
| 07:45 AM | 0 | 0 | 0 | 1 | 4 | 5 | 0 | 7 | 7 | 0 | 0 | 0 | 12 |
| Total | 0 | 3 | 3 | 1 | 9 | 10 | 1 | 15 | 16 | 0 | 9 | 9 | 38 |
| 08:00 AM | 0 | 3 | 3 | 0 | 1 | 1 | 1 | 8 | 9 | 0 | 5 | 5 | 18 |
| 08:15 AM | 1 | 2 | 3 | 0 | 0 | 0 | 1 | 7 | 8 | 1 | 2 | 3 | 14 |
| 08:30 AM | 0 | 6 | 6 | 0 | 0 | 0 | 1 | 27 | 28 | 1 | 8 | 9 | 43 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 3 | 3 | 9 |
| Total | 1 | 11 | 12 | 0 | 1 | 1 | 3 | 48 | 51 | 2 | 18 | 20 | 84 |
| Grand Total | 1 | 14 | 15 | 1 | 10 | 11 | 4 | 63 | 67 | 2 | 27 | 29 | 122 |
| Apprch % | 6.7 | 93.3 | | 9.1 | 90.9 | | 6 | 94 | | 6.9 | 93.1 | | |
| Total % | 0.8 | 11.5 | 12.3 | 0.8 | 8.2 | 9 | 3.3 | 51.6 | 54.9 | 1.6 | 22.1 | 23.8 | |

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103rd St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/7/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 25 | 100 | 28 | 153 | 23 | 98 | 8 | 129 | 7 | 37 | 18 | 62 | 10 | 104 | 20 | 134 | 478 |
| 04:15 PM | 27 | 121 | 20 | 168 | 6 | 108 | 12 | 126 | 14 | 45 | 20 | 79 | 11 | 105 | 23 | 139 | 512 |
| 04:30 PM | 30 | 83 | 18 | 131 | 7 | 102 | 12 | 121 | 6 | 39 | 22 | 67 | 13 | 87 | 26 | 126 | 445 |
| 04:45 PM | 21 | 82 | 27 | 130 | 14 | 107 | 11 | 132 | 10 | 45 | 14 | 69 | 15 | 71 | 14 | 100 | 431 |
| Total | 103 | 386 | 93 | 582 | 50 | 415 | 43 | 508 | 37 | 166 | 74 | 277 | 49 | 367 | 83 | 499 | 1866 |
| 05:00 PM | 41 | 130 | 23 | 194 | 6 | 87 | 9 | 102 | 13 | 48 | 13 | 74 | 8 | 93 | 20 | 121 | 491 |
| 05:15 PM | 26 | 114 | 22 | 162 | 23 | 109 | 9 | 141 | 11 | 43 | 15 | 69 | 15 | 98 | 28 | 141 | 513 |
| 05:30 PM | 24 | 119 | 16 | 159 | 7 | 116 | 8 | 131 | 14 | 36 | 24 | 74 | 11 | 84 | 12 | 107 | 471 |
| 05:45 PM | 15 | 110 | 15 | 140 | 4 | 121 | 1 | 126 | 10 | 36 | 16 | 62 | 18 | 107 | 18 | 143 | 471 |
| Total | 106 | 473 | 76 | 655 | 40 | 433 | 27 | 500 | 48 | 163 | 68 | 279 | 52 | 382 | 78 | 512 | 1946 |
| Grand Total | 209 | 859 | 169 | 1237 | 90 | 848 | 70 | 1008 | 85 | 329 | 142 | 556 | 101 | 749 | 161 | 1011 | 3812 |
| Apprch % | 16.9 | 69.4 | 13.7 | | 8.9 | 84.1 | 6.9 | | 15.3 | 59.2 | 25.5 | | 10 | 74.1 | 15.9 | | |
| Total % | 5.5 | 22.5 | 4.4 | 32.5 | 2.4 | 22.2 | 1.8 | 26.4 | 2.2 | 8.6 | 3.7 | 14.6 | 2.6 | 19.6 | 4.2 | 26.5 | |
| PC | 207 | 836 | 165 | 1208 | 84 | 830 | 68 | 982 | 84 | 316 | 142 | 542 | 101 | 727 | 161 | 989 | 3721 |
| % PC | 99 | 97.3 | 97.6 | 97.7 | 93.3 | 97.9 | 97.1 | 97.4 | 98.8 | 96 | 100 | 97.5 | 100 | 97.1 | 100 | 97.8 | 97.6 |
| SU | 2 | 12 | 2 | 16 | 3 | 9 | 1 | 13 | 1 | 12 | 0 | 13 | 0 | 19 | 0 | 19 | 61 |
| % SU | 1 | 1.4 | 1.2 | 1.3 | 3.3 | 1.1 | 1.4 | 1.3 | 1.2 | 3.6 | 0 | 2.3 | 0 | 2.5 | 0 | 1.9 | 1.6 |
| MU | 0 | 11 | 2 | 13 | 3 | 9 | 1 | 13 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 30 |
| % MU | 0 | 1.3 | 1.2 | 1.1 | 3.3 | 1.1 | 1.4 | 1.3 | 0 | 0.3 | 0 | 0.2 | 0 | 0.4 | 0 | 0.3 | 0.8 |

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 41 | 130 | 23 | 194 | 6 | 87 | 9 | 102 | 13 | 48 | 13 | 74 | 8 | 93 | 20 | 121 | 491 |
| 05:15 PM | 26 | 114 | 22 | 162 | 23 | 109 | 9 | 141 | 11 | 43 | 15 | 69 | 15 | 98 | 28 | 141 | 513 |
| 05:30 PM | 24 | 119 | 16 | 159 | 7 | 116 | 8 | 131 | 14 | 36 | 24 | 74 | 11 | 84 | 12 | 107 | 471 |
| 05:45 PM | 15 | 110 | 15 | 140 | 4 | 121 | 1 | 126 | 10 | 36 | 16 | 62 | 18 | 107 | 18 | 143 | 471 |
| Total Volume | 106 | 473 | 76 | 655 | 40 | 433 | 27 | 500 | 48 | 163 | 68 | 279 | 52 | 382 | 78 | 512 | 1946 |
| % App. Total | 16.2 | 72.2 | 11.6 | | 8 | 86.6 | 5.4 | | 17.2 | 58.4 | 24.4 | | 10.2 | 74.6 | 15.2 | | |
| PHF | .646 | .910 | .826 | .844 | .435 | .895 | .750 | .887 | .857 | .849 | .708 | .943 | .722 | .893 | .696 | .895 | .948 |

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103rd St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 2 | 5 | 3 | 0 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 13 |
| 04:15 PM | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 12 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 9 |
| Total | 1 | 8 | 2 | 11 | 3 | 5 | 0 | 8 | 1 | 7 | 0 | 8 | 0 | 12 | 0 | 12 | 39 |
| 05:00 PM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 6 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 6 |
| Total | 1 | 4 | 0 | 5 | 0 | 4 | 1 | 5 | 0 | 5 | 0 | 5 | 0 | 7 | 0 | 7 | 22 |
| Grand Total | 2 | 12 | 2 | 16 | 3 | 9 | 1 | 13 | 1 | 12 | 0 | 13 | 0 | 19 | 0 | 19 | 61 |
| Apprch % | 12.5 | 75 | 12.5 | | 23.1 | 69.2 | 7.7 | | 7.7 | 92.3 | 0 | | 0 | 100 | 0 | | |
| Total % | 3.3 | 19.7 | 3.3 | 26.2 | 4.9 | 14.8 | 1.6 | 21.3 | 1.6 | 19.7 | 0 | 21.3 | 0 | 31.1 | 0 | 31.1 | |

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103rd St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 103rd St From East | | | | Martin Luther King Dr From South | | | | 103rd St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 2 | 5 | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 9 |
| 04:15 PM | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 7 | 2 | 9 | 3 | 5 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 19 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 4 | 0 | 4 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 11 |
| Grand Total | 0 | 11 | 2 | 13 | 3 | 9 | 1 | 13 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 30 |
| Apprch % | 0 | 84.6 | 15.4 | | 23.1 | 69.2 | 7.7 | | 0 | 100 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 36.7 | 6.7 | 43.3 | 10 | 30 | 3.3 | 43.3 | 0 | 3.3 | 0 | 3.3 | 0 | 10 | 0 | 10 | |

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103rd St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/7/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 103rd St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 4 | 4 | 0 | 4 | 4 | 5 | 42 | 47 | 0 | 7 | 7 | 62 |
| 04:15 PM | 0 | 5 | 5 | 0 | 9 | 9 | 0 | 24 | 24 | 0 | 10 | 10 | 48 |
| 04:30 PM | 0 | 5 | 5 | 0 | 1 | 1 | 2 | 12 | 14 | 2 | 12 | 14 | 34 |
| 04:45 PM | 1 | 10 | 11 | 0 | 2 | 2 | 0 | 22 | 22 | 0 | 7 | 7 | 42 |
| Total | 1 | 24 | 25 | 0 | 16 | 16 | 7 | 100 | 107 | 2 | 36 | 38 | 186 |
| 05:00 PM | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 23 | 23 | 0 | 13 | 13 | 43 |
| 05:15 PM | 0 | 10 | 10 | 0 | 3 | 3 | 0 | 22 | 22 | 1 | 14 | 15 | 50 |
| 05:30 PM | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 20 | 21 | 1 | 6 | 7 | 30 |
| 05:45 PM | 1 | 8 | 9 | 0 | 0 | 0 | 2 | 30 | 32 | 0 | 3 | 3 | 44 |
| Total | 2 | 21 | 23 | 0 | 8 | 8 | 3 | 95 | 98 | 2 | 36 | 38 | 167 |
| Grand Total | 3 | 45 | 48 | 0 | 24 | 24 | 10 | 195 | 205 | 4 | 72 | 76 | 353 |
| Apprch % | 6.2 | 93.8 | | 0 | 100 | | 4.9 | 95.1 | | 5.3 | 94.7 | | |
| Total % | 0.8 | 12.7 | 13.6 | 0 | 6.8 | 6.8 | 2.8 | 55.2 | 58.1 | 1.1 | 20.4 | 21.5 | |

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103rd St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 1

Groups Printed- PC - SU - MU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 3 | 13 | 3 | 19 | 2 | 38 | 2 | 42 | 10 | 64 | 4 | 78 | 5 | 50 | 21 | 76 | 215 |
| 07:15 AM | 1 | 7 | 9 | 17 | 7 | 51 | 1 | 59 | 4 | 66 | 8 | 78 | 7 | 53 | 8 | 68 | 222 |
| 07:30 AM | 2 | 16 | 8 | 26 | 11 | 55 | 4 | 70 | 12 | 73 | 19 | 104 | 6 | 85 | 14 | 105 | 305 |
| 07:45 AM | 2 | 24 | 7 | 33 | 10 | 69 | 3 | 82 | 8 | 93 | 9 | 110 | 5 | 101 | 32 | 138 | 363 |
| Total | 8 | 60 | 27 | 95 | 30 | 213 | 10 | 253 | 34 | 296 | 40 | 370 | 23 | 289 | 75 | 387 | 1105 |
| 08:00 AM | 4 | 30 | 10 | 44 | 7 | 65 | 2 | 74 | 8 | 63 | 10 | 81 | 7 | 80 | 15 | 102 | 301 |
| 08:15 AM | 1 | 22 | 13 | 36 | 6 | 55 | 6 | 67 | 10 | 69 | 13 | 92 | 7 | 98 | 11 | 116 | 311 |
| 08:30 AM | 3 | 24 | 7 | 34 | 3 | 75 | 4 | 82 | 13 | 56 | 10 | 79 | 9 | 93 | 16 | 118 | 313 |
| 08:45 AM | 1 | 32 | 10 | 43 | 3 | 54 | 4 | 61 | 7 | 67 | 16 | 90 | 7 | 90 | 15 | 112 | 306 |
| Total | 9 | 108 | 40 | 157 | 19 | 249 | 16 | 284 | 38 | 255 | 49 | 342 | 30 | 361 | 57 | 448 | 1231 |
| Grand Total | 17 | 168 | 67 | 252 | 49 | 462 | 26 | 537 | 72 | 551 | 89 | 712 | 53 | 650 | 132 | 835 | 2336 |
| Apprch % | 6.7 | 66.7 | 26.6 | | 9.1 | 86 | 4.8 | | 10.1 | 77.4 | 12.5 | | 6.3 | 77.8 | 15.8 | | |
| Total % | 0.7 | 7.2 | 2.9 | 10.8 | 2.1 | 19.8 | 1.1 | 23 | 3.1 | 23.6 | 3.8 | 30.5 | 2.3 | 27.8 | 5.7 | 35.7 | |
| PC | 15 | 157 | 63 | 235 | 46 | 425 | 24 | 495 | 68 | 536 | 87 | 691 | 51 | 612 | 124 | 787 | 2208 |
| % PC | 88.2 | 93.5 | 94 | 93.3 | 93.9 | 92 | 92.3 | 92.2 | 94.4 | 97.3 | 97.8 | 97.1 | 96.2 | 94.2 | 93.9 | 94.3 | 94.5 |
| SU | 2 | 10 | 4 | 16 | 3 | 35 | 2 | 40 | 4 | 14 | 2 | 20 | 2 | 36 | 7 | 45 | 121 |
| % SU | 11.8 | 6 | 6 | 6.3 | 6.1 | 7.6 | 7.7 | 7.4 | 5.6 | 2.5 | 2.2 | 2.8 | 3.8 | 5.5 | 5.3 | 5.4 | 5.2 |
| MU | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 7 |
| % MU | 0 | 0.6 | 0 | 0.4 | 0 | 0.4 | 0 | 0.4 | 0 | 0.2 | 0 | 0.1 | 0 | 0.3 | 0.8 | 0.4 | 0.3 |

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 2 | 24 | 7 | 33 | 10 | 69 | 3 | 82 | 8 | 93 | 9 | 110 | 5 | 101 | 32 | 138 | 363 |
| 08:00 AM | 4 | 30 | 10 | 44 | 7 | 65 | 2 | 74 | 8 | 63 | 10 | 81 | 7 | 80 | 15 | 102 | 301 |
| 08:15 AM | 1 | 22 | 13 | 36 | 6 | 55 | 6 | 67 | 10 | 69 | 13 | 92 | 7 | 98 | 11 | 116 | 311 |
| 08:30 AM | 3 | 24 | 7 | 34 | 3 | 75 | 4 | 82 | 13 | 56 | 10 | 79 | 9 | 93 | 16 | 118 | 313 |
| Total Volume | 10 | 100 | 37 | 147 | 26 | 264 | 15 | 305 | 39 | 281 | 42 | 362 | 28 | 372 | 74 | 474 | 1288 |
| % App. Total | 6.8 | 68 | 25.2 | | 8.5 | 86.6 | 4.9 | | 10.8 | 77.6 | 11.6 | | 5.9 | 78.5 | 15.6 | | |
| PHF | .625 | .833 | .712 | .835 | .650 | .880 | .625 | .930 | .750 | .755 | .808 | .823 | .778 | .921 | .578 | .859 | .887 |

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103rd St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 2

Groups Printed- SU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 2 | 1 | 3 | 0 | 4 | 1 | 2 | 0 | 3 | 0 | 5 | 1 | 6 | 15 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 11 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 1 | 2 | 0 | 3 | 0 | 4 | 1 | 5 | 14 |
| 07:45 AM | 1 | 1 | 0 | 2 | 0 | 4 | 1 | 5 | 1 | 0 | 2 | 3 | 0 | 9 | 3 | 12 | 22 |
| Total | 1 | 3 | 1 | 5 | 1 | 17 | 2 | 20 | 3 | 7 | 2 | 12 | 0 | 20 | 5 | 25 | 62 |
| 08:00 AM | 1 | 3 | 1 | 5 | 1 | 4 | 0 | 5 | 0 | 3 | 0 | 3 | 0 | 4 | 1 | 5 | 18 |
| 08:15 AM | 0 | 3 | 1 | 4 | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 4 | 14 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 10 | 0 | 1 | 0 | 1 | 1 | 4 | 1 | 6 | 17 |
| 08:45 AM | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 4 | 0 | 5 | 10 |
| Total | 1 | 7 | 3 | 11 | 2 | 18 | 0 | 20 | 1 | 7 | 0 | 8 | 2 | 16 | 2 | 20 | 59 |
| Grand Total | 2 | 10 | 4 | 16 | 3 | 35 | 2 | 40 | 4 | 14 | 2 | 20 | 2 | 36 | 7 | 45 | 121 |
| Apprch % | 12.5 | 62.5 | 25 | | 7.5 | 87.5 | 5 | | 20 | 70 | 10 | | 4.4 | 80 | 15.6 | | |
| Total % | 1.7 | 8.3 | 3.3 | 13.2 | 2.5 | 28.9 | 1.7 | 33.1 | 3.3 | 11.6 | 1.7 | 16.5 | 1.7 | 29.8 | 5.8 | 37.2 | |

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103rd St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 3

Groups Printed- MU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 4 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 7 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 66.7 | 33.3 | | |
| Total % | 0 | 14.3 | 0 | 14.3 | 0 | 28.6 | 0 | 28.6 | 0 | 14.3 | 0 | 14.3 | 0 | 28.6 | 14.3 | 42.9 | |

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103rd St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/5/2012

Page No : 4

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 103rd St Crossing East Leg | | | State St Crossing South Leg | | | 103rd St Crossing West Leg | | | Int. Total |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 1 | 4 | 5 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 8 |
| 07:15 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 6 |
| 07:30 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 07:45 AM | 0 | 7 | 7 | 0 | 4 | 4 | 0 | 8 | 8 | 0 | 0 | 0 | 19 |
| Total | 1 | 16 | 17 | 0 | 4 | 4 | 0 | 13 | 13 | 0 | 2 | 2 | 36 |
| 08:00 AM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:15 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 08:30 AM | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 10 | 10 | 16 |
| 08:45 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 15 |
| Total | 1 | 13 | 14 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 22 | 22 | 40 |
| Grand Total | 2 | 29 | 31 | 0 | 5 | 5 | 0 | 16 | 16 | 0 | 24 | 24 | 76 |
| Apprch % | 6.5 | 93.5 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 2.6 | 38.2 | 40.8 | 0 | 6.6 | 6.6 | 0 | 21.1 | 21.1 | 0 | 31.6 | 31.6 | |

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103rd St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 5

Groups Printed- PC - SU - MU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 8 | 49 | 32 | 89 | 11 | 83 | 9 | 103 | 11 | 25 | 13 | 49 | 5 | 96 | 12 | 113 | 354 |
| 04:15 PM | 6 | 47 | 22 | 75 | 15 | 122 | 9 | 146 | 17 | 47 | 11 | 75 | 16 | 118 | 11 | 145 | 441 |
| 04:30 PM | 6 | 34 | 19 | 59 | 12 | 109 | 6 | 127 | 21 | 40 | 13 | 74 | 21 | 101 | 8 | 130 | 390 |
| 04:45 PM | 4 | 24 | 11 | 39 | 17 | 119 | 5 | 141 | 20 | 41 | 15 | 76 | 11 | 98 | 11 | 120 | 376 |
| Total | 24 | 154 | 84 | 262 | 55 | 433 | 29 | 517 | 69 | 153 | 52 | 274 | 53 | 413 | 42 | 508 | 1561 |
| 05:00 PM | 5 | 31 | 22 | 58 | 15 | 143 | 14 | 172 | 17 | 34 | 11 | 62 | 7 | 103 | 15 | 125 | 417 |
| 05:15 PM | 9 | 50 | 20 | 79 | 14 | 119 | 12 | 145 | 18 | 46 | 8 | 72 | 5 | 84 | 14 | 103 | 399 |
| 05:30 PM | 9 | 33 | 26 | 68 | 6 | 104 | 8 | 118 | 13 | 50 | 10 | 73 | 4 | 146 | 14 | 164 | 423 |
| 05:45 PM | 2 | 48 | 27 | 77 | 12 | 87 | 5 | 104 | 7 | 35 | 15 | 57 | 13 | 93 | 12 | 118 | 356 |
| Total | 25 | 162 | 95 | 282 | 47 | 453 | 39 | 539 | 55 | 165 | 44 | 264 | 29 | 426 | 55 | 510 | 1595 |
| Grand Total | 49 | 316 | 179 | 544 | 102 | 886 | 68 | 1056 | 124 | 318 | 96 | 538 | 82 | 839 | 97 | 1018 | 3156 |
| Apprch % | 9 | 58.1 | 32.9 | | 9.7 | 83.9 | 6.4 | | 23 | 59.1 | 17.8 | | 8.1 | 82.4 | 9.5 | | |
| Total % | 1.6 | 10 | 5.7 | 17.2 | 3.2 | 28.1 | 2.2 | 33.5 | 3.9 | 10.1 | 3 | 17 | 2.6 | 26.6 | 3.1 | 32.3 | |
| PC | 47 | 313 | 175 | 535 | 101 | 870 | 68 | 1039 | 122 | 314 | 96 | 532 | 80 | 821 | 95 | 996 | 3102 |
| % PC | 95.9 | 99.1 | 97.8 | 98.3 | 99 | 98.2 | 100 | 98.4 | 98.4 | 98.7 | 100 | 98.9 | 97.6 | 97.9 | 97.9 | 97.8 | 98.3 |
| SU | 2 | 3 | 4 | 9 | 1 | 15 | 0 | 16 | 2 | 4 | 0 | 6 | 2 | 18 | 2 | 22 | 53 |
| % SU | 4.1 | 0.9 | 2.2 | 1.7 | 1 | 1.7 | 0 | 1.5 | 1.6 | 1.3 | 0 | 1.1 | 2.4 | 2.1 | 2.1 | 2.2 | 1.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:15 PM | | | | | | | | | | | | | | | | | |
| 04:15 PM | 6 | 47 | 22 | 75 | 15 | 122 | 9 | 146 | 17 | 47 | 11 | 75 | 16 | 118 | 11 | 145 | 441 |
| 04:30 PM | 6 | 34 | 19 | 59 | 12 | 109 | 6 | 127 | 21 | 40 | 13 | 74 | 21 | 101 | 8 | 130 | 390 |
| 04:45 PM | 4 | 24 | 11 | 39 | 17 | 119 | 5 | 141 | 20 | 41 | 15 | 76 | 11 | 98 | 11 | 120 | 376 |
| 05:00 PM | 5 | 31 | 22 | 58 | 15 | 143 | 14 | 172 | 17 | 34 | 11 | 62 | 7 | 103 | 15 | 125 | 417 |
| Total Volume | 21 | 136 | 74 | 231 | 59 | 493 | 34 | 586 | 75 | 162 | 50 | 287 | 55 | 420 | 45 | 520 | 1624 |
| % App. Total | 9.1 | 58.9 | 32 | | 10.1 | 84.1 | 5.8 | | 26.1 | 56.4 | 17.4 | | 10.6 | 80.8 | 8.7 | | |
| PHF | .875 | .723 | .841 | .770 | .868 | .862 | .607 | .852 | .893 | .862 | .833 | .944 | .655 | .890 | .750 | .897 | .921 |

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103rd St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 6

Groups Printed- SU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 0 | 1 | 3 | 1 | 3 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 2 | 11 |
| 04:15 PM | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 7 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 7 |
| 04:45 PM | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| Total | 2 | 3 | 3 | 8 | 1 | 9 | 0 | 10 | 1 | 3 | 0 | 4 | 1 | 7 | 1 | 9 | 31 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 4 | 7 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 05:45 PM | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 8 |
| Total | 0 | 0 | 1 | 1 | 0 | 6 | 0 | 6 | 1 | 1 | 0 | 2 | 1 | 11 | 1 | 13 | 22 |
| Grand Total | 2 | 3 | 4 | 9 | 1 | 15 | 0 | 16 | 2 | 4 | 0 | 6 | 2 | 18 | 2 | 22 | 53 |
| Apprch % | 22.2 | 33.3 | 44.4 | | 6.2 | 93.8 | 0 | | 33.3 | 66.7 | 0 | | 9.1 | 81.8 | 9.1 | | |
| Total % | 3.8 | 5.7 | 7.5 | 17 | 1.9 | 28.3 | 0 | 30.2 | 3.8 | 7.5 | 0 | 11.3 | 3.8 | 34 | 3.8 | 41.5 | |

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103rd St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 7

Groups Printed- MU

| | State St From North | | | | 103rd St From East | | | | State St From South | | | | 103rd St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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103rd St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/5/2012
Page No : 8

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 103rd St Crossing East Leg | | | State St Crossing South Leg | | | 103rd St Crossing West Leg | | | Int. Total |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 9 | 9 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 7 | 7 | 21 |
| 04:15 PM | 0 | 16 | 16 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 24 |
| 04:30 PM | 0 | 14 | 14 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 3 | 3 | 22 |
| 04:45 PM | 0 | 14 | 14 | 1 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Total | 0 | 53 | 53 | 1 | 12 | 13 | 0 | 6 | 6 | 0 | 14 | 14 | 86 |
| 05:00 PM | 0 | 14 | 14 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 4 | 4 | 26 |
| 05:15 PM | 0 | 14 | 14 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 17 |
| 05:30 PM | 0 | 18 | 18 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 3 | 3 | 23 |
| 05:45 PM | 0 | 5 | 5 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 4 | 4 | 14 |
| Total | 0 | 51 | 51 | 0 | 13 | 13 | 0 | 3 | 3 | 0 | 13 | 13 | 80 |
| Grand Total | 0 | 104 | 104 | 1 | 25 | 26 | 0 | 9 | 9 | 0 | 27 | 27 | 166 |
| Apprch % | 0 | 100 | | 3.8 | 96.2 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 62.7 | 62.7 | 0.6 | 15.1 | 15.7 | 0 | 5.4 | 5.4 | 0 | 16.3 | 16.3 | |

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103rd St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM No Peds
Site Code : 00000000
Start Date : 5/2/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 26 | 6 | 37 | 4 | 59 | 6 | 69 | 14 | 24 | 5 | 43 | 5 | 47 | 1 | 53 | 202 |
| 07:15 AM | 3 | 33 | 7 | 43 | 4 | 75 | 6 | 85 | 15 | 27 | 8 | 50 | 8 | 54 | 5 | 67 | 245 |
| 07:30 AM | 6 | 44 | 7 | 57 | 7 | 58 | 6 | 71 | 16 | 37 | 13 | 66 | 15 | 85 | 3 | 103 | 297 |
| 07:45 AM | 6 | 49 | 13 | 68 | 10 | 94 | 8 | 112 | 18 | 39 | 10 | 67 | 12 | 102 | 4 | 118 | 365 |
| Total | 20 | 152 | 33 | 205 | 25 | 286 | 26 | 337 | 63 | 127 | 36 | 226 | 40 | 288 | 13 | 341 | 1109 |
| 08:00 AM | 2 | 48 | 14 | 64 | 9 | 93 | 5 | 107 | 29 | 32 | 9 | 70 | 14 | 106 | 7 | 127 | 368 |
| 08:15 AM | 12 | 51 | 15 | 78 | 7 | 93 | 8 | 108 | 16 | 25 | 9 | 50 | 9 | 90 | 4 | 103 | 339 |
| 08:30 AM | 8 | 43 | 7 | 58 | 10 | 78 | 7 | 95 | 36 | 28 | 8 | 72 | 11 | 106 | 3 | 120 | 345 |
| 08:45 AM | 5 | 40 | 15 | 60 | 9 | 88 | 2 | 99 | 17 | 34 | 10 | 61 | 10 | 79 | 3 | 92 | 312 |
| Total | 27 | 182 | 51 | 260 | 35 | 352 | 22 | 409 | 98 | 119 | 36 | 253 | 44 | 381 | 17 | 442 | 1364 |
| Grand Total | 47 | 334 | 84 | 465 | 60 | 638 | 48 | 746 | 161 | 246 | 72 | 479 | 84 | 669 | 30 | 783 | 2473 |
| Apprch % | 10.1 | 71.8 | 18.1 | | 8 | 85.5 | 6.4 | | 33.6 | 51.4 | 15 | | 10.7 | 85.4 | 3.8 | | |
| Total % | 1.9 | 13.5 | 3.4 | 18.8 | 2.4 | 25.8 | 1.9 | 30.2 | 6.5 | 9.9 | 2.9 | 19.4 | 3.4 | 27.1 | 1.2 | 31.7 | |
| PC | 44 | 315 | 78 | 437 | 57 | 609 | 42 | 708 | 160 | 237 | 71 | 468 | 73 | 630 | 29 | 732 | 2345 |
| % PC | 93.6 | 94.3 | 92.9 | 94 | 95 | 95.5 | 87.5 | 94.9 | 99.4 | 96.3 | 98.6 | 97.7 | 86.9 | 94.2 | 96.7 | 93.5 | 94.8 |
| SU | 3 | 19 | 6 | 28 | 3 | 27 | 6 | 36 | 1 | 8 | 1 | 10 | 11 | 33 | 0 | 44 | 118 |
| % SU | 6.4 | 5.7 | 7.1 | 6 | 5 | 4.2 | 12.5 | 4.8 | 0.6 | 3.3 | 1.4 | 2.1 | 13.1 | 4.9 | 0 | 5.6 | 4.8 |
| MU | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 7 | 10 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.3 | 0 | 0.4 | 0 | 0.2 | 0 | 0.9 | 3.3 | 0.9 | 0.4 |

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 6 | 49 | 13 | 68 | 10 | 94 | 8 | 112 | 18 | 39 | 10 | 67 | 12 | 102 | 4 | 118 | 365 |
| 08:00 AM | 2 | 48 | 14 | 64 | 9 | 93 | 5 | 107 | 29 | 32 | 9 | 70 | 14 | 106 | 7 | 127 | 368 |
| 08:15 AM | 12 | 51 | 15 | 78 | 7 | 93 | 8 | 108 | 16 | 25 | 9 | 50 | 9 | 90 | 4 | 103 | 339 |
| 08:30 AM | 8 | 43 | 7 | 58 | 10 | 78 | 7 | 95 | 36 | 28 | 8 | 72 | 11 | 106 | 3 | 120 | 345 |
| Total Volume | 28 | 191 | 49 | 268 | 36 | 358 | 28 | 422 | 99 | 124 | 36 | 259 | 46 | 404 | 18 | 468 | 1417 |
| % App. Total | 10.4 | 71.3 | 18.3 | | 8.5 | 84.8 | 6.6 | | 38.2 | 47.9 | 13.9 | | 9.8 | 86.3 | 3.8 | | |
| PHF | .583 | .936 | .817 | .859 | .900 | .952 | .875 | .942 | .688 | .795 | .900 | .899 | .821 | .953 | .643 | .921 | .963 |

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103rd St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 0 | 0 | 1 | 0 | 5 | 1 | 6 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 9 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 6 |
| 07:30 AM | 1 | 3 | 1 | 5 | 0 | 4 | 1 | 5 | 1 | 0 | 0 | 1 | 1 | 6 | 0 | 7 | 18 |
| 07:45 AM | 0 | 2 | 1 | 3 | 1 | 2 | 3 | 6 | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 9 | 18 |
| Total | 2 | 6 | 2 | 10 | 1 | 13 | 5 | 19 | 1 | 2 | 0 | 3 | 5 | 14 | 0 | 19 | 51 |
| 08:00 AM | 0 | 7 | 0 | 7 | 2 | 4 | 0 | 6 | 0 | 2 | 0 | 2 | 3 | 4 | 0 | 7 | 22 |
| 08:15 AM | 1 | 1 | 3 | 5 | 0 | 5 | 1 | 6 | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 3 | 16 |
| 08:30 AM | 0 | 3 | 1 | 4 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 8 | 0 | 8 | 18 |
| 08:45 AM | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 7 | 11 |
| Total | 1 | 13 | 4 | 18 | 2 | 14 | 1 | 17 | 0 | 6 | 1 | 7 | 6 | 19 | 0 | 25 | 67 |
| Grand Total | 3 | 19 | 6 | 28 | 3 | 27 | 6 | 36 | 1 | 8 | 1 | 10 | 11 | 33 | 0 | 44 | 118 |
| Apprch % | 10.7 | 67.9 | 21.4 | | 8.3 | 75 | 16.7 | | 10 | 80 | 10 | | 25 | 75 | 0 | | |
| Total % | 2.5 | 16.1 | 5.1 | 23.7 | 2.5 | 22.9 | 5.1 | 30.5 | 0.8 | 6.8 | 0.8 | 8.5 | 9.3 | 28 | 0 | 37.3 | |

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103rd St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 4 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 5 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 5 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 7 | 10 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 85.7 | 14.3 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 20 | 0 | 10 | 0 | 10 | 0 | 60 | 10 | 70 | |

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103rd St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM PEDS
Site Code : 00000000
Start Date : 5/2/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Left | Peds | App. Total | Left | Peds | App. Total | Left | Peds | App. Total | Left | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 8 | 8 | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 5 | 5 | 20 |
| 07:15 AM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 5 | 5 | 1 | 12 | 13 | 23 |
| 07:30 AM | 2 | 6 | 8 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 8 | 8 | 23 |
| 07:45 AM | 2 | 5 | 7 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 25 | 25 | 36 |
| Total | 4 | 23 | 27 | 0 | 8 | 8 | 0 | 16 | 16 | 1 | 50 | 51 | 102 |
| 08:00 AM | 0 | 17 | 17 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 20 | 20 | 42 |
| 08:15 AM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 15 | 15 | 24 |
| 08:30 AM | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 10 | 10 | 18 |
| 08:45 AM | 0 | 10 | 10 | 0 | 5 | 5 | 0 | 3 | 3 | 0 | 3 | 3 | 21 |
| Total | 0 | 35 | 35 | 0 | 8 | 8 | 0 | 14 | 14 | 0 | 48 | 48 | 105 |
| Grand Total | 4 | 58 | 62 | 0 | 16 | 16 | 0 | 30 | 30 | 1 | 98 | 99 | 207 |
| Apprch % | 6.5 | 93.5 | | 0 | 100 | | 0 | 100 | | 1 | 99 | | |
| Total % | 1.9 | 28 | 30 | 0 | 7.7 | 7.7 | 0 | 14.5 | 14.5 | 0.5 | 47.3 | 47.8 | |

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103rd St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM No Peds
Site Code : 00000000
Start Date : 5/2/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 13 | 37 | 12 | 62 | 8 | 95 | 9 | 112 | 16 | 24 | 12 | 52 | 17 | 79 | 2 | 98 | 324 |
| 04:15 PM | 13 | 51 | 13 | 77 | 8 | 106 | 13 | 127 | 27 | 22 | 7 | 56 | 9 | 116 | 6 | 131 | 391 |
| 04:30 PM | 5 | 61 | 9 | 75 | 8 | 93 | 10 | 111 | 16 | 19 | 12 | 47 | 12 | 85 | 6 | 103 | 336 |
| 04:45 PM | 4 | 68 | 12 | 84 | 8 | 99 | 13 | 120 | 16 | 26 | 14 | 56 | 15 | 92 | 7 | 114 | 374 |
| Total | 35 | 217 | 46 | 298 | 32 | 393 | 45 | 470 | 75 | 91 | 45 | 211 | 53 | 372 | 21 | 446 | 1425 |
| 05:00 PM | 13 | 60 | 10 | 83 | 9 | 117 | 21 | 147 | 18 | 17 | 8 | 43 | 13 | 101 | 6 | 120 | 393 |
| 05:15 PM | 10 | 54 | 12 | 76 | 5 | 129 | 13 | 147 | 19 | 18 | 11 | 48 | 19 | 101 | 8 | 128 | 399 |
| 05:30 PM | 11 | 55 | 13 | 79 | 12 | 96 | 12 | 120 | 17 | 26 | 5 | 48 | 20 | 91 | 2 | 113 | 360 |
| 05:45 PM | 11 | 56 | 16 | 83 | 6 | 99 | 20 | 125 | 18 | 15 | 13 | 46 | 12 | 89 | 3 | 104 | 358 |
| Total | 45 | 225 | 51 | 321 | 32 | 441 | 66 | 539 | 72 | 76 | 37 | 185 | 64 | 382 | 19 | 465 | 1510 |
| Grand Total | 80 | 442 | 97 | 619 | 64 | 834 | 111 | 1009 | 147 | 167 | 82 | 396 | 117 | 754 | 40 | 911 | 2935 |
| Apprch % | 12.9 | 71.4 | 15.7 | | 6.3 | 82.7 | 11 | | 37.1 | 42.2 | 20.7 | | 12.8 | 82.8 | 4.4 | | |
| Total % | 2.7 | 15.1 | 3.3 | 21.1 | 2.2 | 28.4 | 3.8 | 34.4 | 5 | 5.7 | 2.8 | 13.5 | 4 | 25.7 | 1.4 | 31 | |
| PC | 78 | 437 | 96 | 611 | 64 | 813 | 110 | 987 | 145 | 165 | 82 | 392 | 114 | 733 | 39 | 886 | 2876 |
| % PC | 97.5 | 98.9 | 99 | 98.7 | 100 | 97.5 | 99.1 | 97.8 | 98.6 | 98.8 | 100 | 99 | 97.4 | 97.2 | 97.5 | 97.3 | 98 |
| SU | 2 | 4 | 1 | 7 | 0 | 21 | 1 | 22 | 2 | 2 | 0 | 4 | 3 | 20 | 1 | 24 | 57 |
| % SU | 2.5 | 0.9 | 1 | 1.1 | 0 | 2.5 | 0.9 | 2.2 | 1.4 | 1.2 | 0 | 1 | 2.6 | 2.7 | 2.5 | 2.6 | 1.9 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0.1 |

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 6 | 49 | 13 | 68 | 10 | 94 | 8 | 112 | 18 | 39 | 10 | 67 | 12 | 102 | 4 | 118 | 365 |
| 08:00 AM | 2 | 48 | 14 | 64 | 9 | 93 | 5 | 107 | 29 | 32 | 9 | 70 | 14 | 106 | 7 | 127 | 368 |
| 08:15 AM | 12 | 51 | 15 | 78 | 7 | 93 | 8 | 108 | 16 | 25 | 9 | 50 | 9 | 90 | 4 | 103 | 339 |
| 08:30 AM | 8 | 43 | 7 | 58 | 10 | 78 | 7 | 95 | 36 | 28 | 8 | 72 | 11 | 106 | 3 | 120 | 345 |
| Total Volume | 28 | 191 | 49 | 268 | 36 | 358 | 28 | 422 | 99 | 124 | 36 | 259 | 46 | 404 | 18 | 468 | 1417 |
| % App. Total | 10.4 | 71.3 | 18.3 | | 8.5 | 84.8 | 6.6 | | 38.2 | 47.9 | 13.9 | | 9.8 | 86.3 | 3.8 | | |
| PHF | .583 | .936 | .817 | .859 | .900 | .952 | .875 | .942 | .688 | .795 | .900 | .899 | .821 | .953 | .643 | .921 | .963 |

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103rd St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 1 | 1 | 4 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 4 | 13 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 9 |
| Total | 2 | 1 | 1 | 4 | 0 | 15 | 1 | 16 | 1 | 1 | 0 | 2 | 1 | 9 | 1 | 11 | 33 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 5 |
| 05:15 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 6 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 9 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| Total | 0 | 3 | 0 | 3 | 0 | 6 | 0 | 6 | 1 | 1 | 0 | 2 | 2 | 11 | 0 | 13 | 24 |
| Grand Total | 2 | 4 | 1 | 7 | 0 | 21 | 1 | 22 | 2 | 2 | 0 | 4 | 3 | 20 | 1 | 24 | 57 |
| Apprch % | 28.6 | 57.1 | 14.3 | | 0 | 95.5 | 4.5 | | 50 | 50 | 0 | | 12.5 | 83.3 | 4.2 | | |
| Total % | 3.5 | 7 | 1.8 | 12.3 | 0 | 36.8 | 1.8 | 38.6 | 3.5 | 3.5 | 0 | 7 | 5.3 | 35.1 | 1.8 | 42.1 | |

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103rd St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM No Peds

Site Code : 00000000

Start Date : 5/2/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 103rd St From East | | | | Wentworth Ave From South | | | | 103rd St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | |

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103rd St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM PEDS
Site Code : 00000000
Start Date : 5/2/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 103rd St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 103rd St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Left | Peds | App. Total | Left | Peds | App. Total | Left | Peds | App. Total | Left | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 9 | 9 | 0 | 3 | 3 | 0 | 17 | 17 | 2 | 10 | 12 | 41 |
| 04:15 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 17 | 18 | 25 |
| 04:30 PM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 9 | 9 | 20 |
| 04:45 PM | 0 | 16 | 16 | 0 | 0 | 0 | 0 | 22 | 22 | 1 | 35 | 36 | 74 |
| Total | 0 | 32 | 32 | 0 | 4 | 4 | 0 | 49 | 49 | 4 | 71 | 75 | 160 |
| 05:00 PM | 0 | 4 | 4 | 0 | 8 | 8 | 0 | 1 | 1 | 2 | 18 | 20 | 33 |
| 05:15 PM | 0 | 6 | 6 | 0 | 6 | 6 | 2 | 9 | 11 | 1 | 7 | 8 | 31 |
| 05:30 PM | 0 | 6 | 6 | 0 | 10 | 10 | 0 | 4 | 4 | 0 | 6 | 6 | 26 |
| 05:45 PM | 1 | 9 | 10 | 0 | 6 | 6 | 0 | 5 | 5 | 0 | 5 | 5 | 26 |
| Total | 1 | 25 | 26 | 0 | 30 | 30 | 2 | 19 | 21 | 3 | 36 | 39 | 116 |
| Grand Total | 1 | 57 | 58 | 0 | 34 | 34 | 2 | 68 | 70 | 7 | 107 | 114 | 276 |
| Apprch % | 1.7 | 98.3 | | 0 | 100 | | 2.9 | 97.1 | | 6.1 | 93.9 | | |
| Total % | 0.4 | 20.7 | 21 | 0 | 12.3 | 12.3 | 0.7 | 24.6 | 25.4 | 2.5 | 38.8 | 41.3 | |

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107th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 28 | 2 | 35 | 3 | 1 | 0 | 4 | 0 | 43 | 3 | 46 | 3 | 0 | 17 | 20 | 105 |
| 07:15 AM | 9 | 26 | 2 | 37 | 3 | 3 | 1 | 7 | 0 | 67 | 5 | 72 | 7 | 0 | 24 | 31 | 147 |
| 07:30 AM | 12 | 37 | 0 | 49 | 1 | 1 | 0 | 2 | 1 | 71 | 7 | 79 | 11 | 2 | 17 | 30 | 160 |
| 07:45 AM | 10 | 45 | 0 | 55 | 4 | 2 | 0 | 6 | 2 | 113 | 4 | 119 | 15 | 1 | 26 | 42 | 222 |
| Total | 36 | 136 | 4 | 176 | 11 | 7 | 1 | 19 | 3 | 294 | 19 | 316 | 36 | 3 | 84 | 123 | 634 |
| 08:00 AM | 8 | 40 | 1 | 49 | 2 | 0 | 0 | 2 | 1 | 99 | 5 | 105 | 6 | 1 | 29 | 36 | 192 |
| 08:15 AM | 9 | 33 | 1 | 43 | 1 | 0 | 1 | 2 | 1 | 96 | 14 | 111 | 8 | 3 | 22 | 33 | 189 |
| 08:30 AM | 20 | 44 | 2 | 66 | 0 | 0 | 1 | 1 | 2 | 101 | 10 | 113 | 3 | 4 | 15 | 22 | 202 |
| 08:45 AM | 18 | 72 | 1 | 91 | 2 | 4 | 0 | 6 | 3 | 101 | 16 | 120 | 9 | 2 | 33 | 44 | 261 |
| Total | 55 | 189 | 5 | 249 | 5 | 4 | 2 | 11 | 7 | 397 | 45 | 449 | 26 | 10 | 99 | 135 | 844 |
| Grand Total | 91 | 325 | 9 | 425 | 16 | 11 | 3 | 30 | 10 | 691 | 64 | 765 | 62 | 13 | 183 | 258 | 1478 |
| Apprch % | 21.4 | 76.5 | 2.1 | | 53.3 | 36.7 | 10 | | 1.3 | 90.3 | 8.4 | | 24 | 5 | 70.9 | | |
| Total % | 6.2 | 22 | 0.6 | 28.8 | 1.1 | 0.7 | 0.2 | 2 | 0.7 | 46.8 | 4.3 | 51.8 | 4.2 | 0.9 | 12.4 | 17.5 | |
| PC | 80 | 305 | 8 | 393 | 15 | 8 | 3 | 26 | 9 | 659 | 61 | 729 | 60 | 11 | 175 | 246 | 1394 |
| % PC | 87.9 | 93.8 | 88.9 | 92.5 | 93.8 | 72.7 | 100 | 86.7 | 90 | 95.4 | 95.3 | 95.3 | 96.8 | 84.6 | 95.6 | 95.3 | 94.3 |
| SU | 11 | 20 | 0 | 31 | 1 | 2 | 0 | 3 | 0 | 27 | 2 | 29 | 2 | 2 | 8 | 12 | 75 |
| % SU | 12.1 | 6.2 | 0 | 7.3 | 6.2 | 18.2 | 0 | 10 | 0 | 3.9 | 3.1 | 3.8 | 3.2 | 15.4 | 4.4 | 4.7 | 5.1 |
| MU | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 5 | 1 | 7 | 0 | 0 | 0 | 0 | 9 |
| % MU | 0 | 0 | 11.1 | 0.2 | 0 | 9.1 | 0 | 3.3 | 10 | 0.7 | 1.6 | 0.9 | 0 | 0 | 0 | 0 | 0.6 |

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 40 | 1 | 49 | 2 | 0 | 0 | 2 | 1 | 99 | 5 | 105 | 6 | 1 | 29 | 36 | 192 |
| 08:15 AM | 9 | 33 | 1 | 43 | 1 | 0 | 1 | 2 | 1 | 96 | 14 | 111 | 8 | 3 | 22 | 33 | 189 |
| 08:30 AM | 20 | 44 | 2 | 66 | 0 | 0 | 1 | 1 | 2 | 101 | 10 | 113 | 3 | 4 | 15 | 22 | 202 |
| 08:45 AM | 18 | 72 | 1 | 91 | 2 | 4 | 0 | 6 | 3 | 101 | 16 | 120 | 9 | 2 | 33 | 44 | 261 |
| Total Volume | 55 | 189 | 5 | 249 | 5 | 4 | 2 | 11 | 7 | 397 | 45 | 449 | 26 | 10 | 99 | 135 | 844 |
| % App. Total | 22.1 | 75.9 | 2 | | 45.5 | 36.4 | 18.2 | | 1.6 | 88.4 | 10 | | 19.3 | 7.4 | 73.3 | | |
| PHF | .688 | .656 | .625 | .684 | .625 | .250 | .500 | .458 | .583 | .983 | .703 | .935 | .722 | .625 | .750 | .767 | .808 |

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107th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 2

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 6 |
| 07:15 AM | 2 | 1 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 2 | 9 |
| 07:30 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 5 |
| 07:45 AM | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 3 | 1 | 4 | 1 | 0 | 1 | 2 | 12 |
| Total | 3 | 9 | 0 | 12 | 1 | 2 | 0 | 3 | 0 | 10 | 1 | 11 | 2 | 0 | 4 | 6 | 32 |
| 08:00 AM | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 5 |
| 08:15 AM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 1 | 3 | 4 | 13 |
| 08:30 AM | 3 | 4 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 1 | 0 | 1 | 12 |
| 08:45 AM | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 13 |
| Total | 8 | 11 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 18 | 0 | 2 | 4 | 6 | 43 |
| Grand Total | 11 | 20 | 0 | 31 | 1 | 2 | 0 | 3 | 0 | 27 | 2 | 29 | 2 | 2 | 8 | 12 | 75 |
| Apprch % | 35.5 | 64.5 | 0 | | 33.3 | 66.7 | 0 | | 0 | 93.1 | 6.9 | | 16.7 | 16.7 | 66.7 | | |
| Total % | 14.7 | 26.7 | 0 | 41.3 | 1.3 | 2.7 | 0 | 4 | 0 | 36 | 2.7 | 38.7 | 2.7 | 2.7 | 10.7 | 16 | |

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107th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 3

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 |
| Grand Total | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 5 | 1 | 7 | 0 | 0 | 0 | 0 | 9 |
| Apprch % | 0 | 0 | 100 | | 0 | 100 | 0 | | 14.3 | 71.4 | 14.3 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 11.1 | 11.1 | 0 | 11.1 | 0 | 11.1 | 11.1 | 55.6 | 11.1 | 77.8 | 0 | 0 | 0 | 0 | |

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107th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 6 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:45 AM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 7 | 7 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 0 | 0 | 12 |
| 08:00 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:15 AM | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| 08:30 AM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:45 AM | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 10 |
| Total | 0 | 19 | 19 | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 2 | 2 | 27 |
| Grand Total | 0 | 26 | 26 | 0 | 8 | 8 | 0 | 3 | 3 | 0 | 2 | 2 | 39 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 66.7 | 66.7 | 0 | 20.5 | 20.5 | 0 | 7.7 | 7.7 | 0 | 5.1 | 5.1 | |

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107th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 5

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 12 | 91 | 4 | 107 | 5 | 2 | 0 | 7 | 1 | 48 | 20 | 69 | 16 | 0 | 9 | 25 | 208 |
| 04:15 PM | 11 | 80 | 1 | 92 | 2 | 5 | 0 | 7 | 3 | 47 | 22 | 72 | 19 | 3 | 15 | 37 | 208 |
| 04:30 PM | 12 | 78 | 2 | 92 | 1 | 1 | 1 | 3 | 2 | 39 | 7 | 48 | 16 | 3 | 16 | 35 | 178 |
| 04:45 PM | 9 | 106 | 3 | 118 | 8 | 0 | 1 | 9 | 2 | 52 | 12 | 66 | 9 | 2 | 12 | 23 | 216 |
| Total | 44 | 355 | 10 | 409 | 16 | 8 | 2 | 26 | 8 | 186 | 61 | 255 | 60 | 8 | 52 | 120 | 810 |
| 05:00 PM | 14 | 105 | 0 | 119 | 3 | 0 | 1 | 4 | 2 | 53 | 8 | 63 | 25 | 2 | 12 | 39 | 225 |
| 05:15 PM | 21 | 107 | 1 | 129 | 0 | 2 | 1 | 3 | 0 | 48 | 15 | 63 | 11 | 3 | 6 | 20 | 215 |
| 05:30 PM | 11 | 72 | 0 | 83 | 2 | 2 | 0 | 4 | 1 | 36 | 12 | 49 | 12 | 5 | 9 | 26 | 162 |
| 05:45 PM | 13 | 75 | 2 | 90 | 2 | 0 | 0 | 2 | 1 | 44 | 10 | 55 | 26 | 0 | 15 | 41 | 188 |
| Total | 59 | 359 | 3 | 421 | 7 | 4 | 2 | 13 | 4 | 181 | 45 | 230 | 74 | 10 | 42 | 126 | 790 |
| Grand Total | 103 | 714 | 13 | 830 | 23 | 12 | 4 | 39 | 12 | 367 | 106 | 485 | 134 | 18 | 94 | 246 | 1600 |
| Apprch % | 12.4 | 86 | 1.6 | | 59 | 30.8 | 10.3 | | 2.5 | 75.7 | 21.9 | | 54.5 | 7.3 | 38.2 | | |
| Total % | 6.4 | 44.6 | 0.8 | 51.9 | 1.4 | 0.8 | 0.2 | 2.4 | 0.8 | 22.9 | 6.6 | 30.3 | 8.4 | 1.1 | 5.9 | 15.4 | |
| PC | 103 | 696 | 12 | 811 | 20 | 11 | 4 | 35 | 12 | 354 | 105 | 471 | 132 | 16 | 94 | 242 | 1559 |
| % PC | 100 | 97.5 | 92.3 | 97.7 | 87 | 91.7 | 100 | 89.7 | 100 | 96.5 | 99.1 | 97.1 | 98.5 | 88.9 | 100 | 98.4 | 97.4 |
| SU | 0 | 18 | 1 | 19 | 3 | 1 | 0 | 4 | 0 | 12 | 1 | 13 | 2 | 2 | 0 | 4 | 40 |
| % SU | 0 | 2.5 | 7.7 | 2.3 | 13 | 8.3 | 0 | 10.3 | 0 | 3.3 | 0.9 | 2.7 | 1.5 | 11.1 | 0 | 1.6 | 2.5 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.1 |

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 40 | 1 | 49 | 2 | 0 | 0 | 2 | 1 | 99 | 5 | 105 | 6 | 1 | 29 | 36 | 192 |
| 08:15 AM | 9 | 33 | 1 | 43 | 1 | 0 | 1 | 2 | 1 | 96 | 14 | 111 | 8 | 3 | 22 | 33 | 189 |
| 08:30 AM | 20 | 44 | 2 | 66 | 0 | 0 | 1 | 1 | 2 | 101 | 10 | 113 | 3 | 4 | 15 | 22 | 202 |
| 08:45 AM | 18 | 72 | 1 | 91 | 2 | 4 | 0 | 6 | 3 | 101 | 16 | 120 | 9 | 2 | 33 | 44 | 261 |
| Total Volume | 55 | 189 | 5 | 249 | 5 | 4 | 2 | 11 | 7 | 397 | 45 | 449 | 26 | 10 | 99 | 135 | 844 |
| % App. Total | 22.1 | 75.9 | 2 | | 45.5 | 36.4 | 18.2 | | 1.6 | 88.4 | 10 | | 19.3 | 7.4 | 73.3 | | |
| PHF | .688 | .656 | .625 | .684 | .625 | .250 | .500 | .458 | .583 | .983 | .703 | .935 | .722 | .625 | .750 | .767 | .808 |

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107th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 6

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 6 |
| 04:15 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 7 |
| 04:30 PM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 7 |
| 04:45 PM | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 7 |
| Total | 0 | 10 | 1 | 11 | 3 | 1 | 0 | 4 | 0 | 8 | 1 | 9 | 1 | 2 | 0 | 3 | 27 |
| 05:00 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 05:15 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 05:45 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 13 |
| Grand Total | 0 | 18 | 1 | 19 | 3 | 1 | 0 | 4 | 0 | 12 | 1 | 13 | 2 | 2 | 0 | 4 | 40 |
| Apprch % | 0 | 94.7 | 5.3 | | 75 | 25 | 0 | | 0 | 92.3 | 7.7 | | 50 | 50 | 0 | | |
| Total % | 0 | 45 | 2.5 | 47.5 | 7.5 | 2.5 | 0 | 10 | 0 | 30 | 2.5 | 32.5 | 5 | 5 | 0 | 10 | |

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107th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 7

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 107th St From East | | | | Cottage Grove Ave From South | | | | 107th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | 100 | 0 | 0 | 0 | | |

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107th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 4 |
| 04:15 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 9 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 |
| Total | 0 | 8 | 8 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 1 | 1 | 16 |
| 05:00 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 6 |
| 05:15 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Total | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 3 | 3 | 13 |
| Grand Total | 0 | 13 | 13 | 0 | 2 | 2 | 0 | 10 | 10 | 0 | 4 | 4 | 29 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 44.8 | 44.8 | 0 | 6.9 | 6.9 | 0 | 34.5 | 34.5 | 0 | 13.8 | 13.8 | |

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107th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 77 | 11 | 93 | 7 | 23 | 18 | 48 | 13 | 256 | 16 | 285 | 10 | 20 | 22 | 52 | 478 |
| 07:15 AM | 7 | 79 | 7 | 93 | 20 | 35 | 8 | 63 | 12 | 352 | 23 | 387 | 12 | 25 | 25 | 62 | 605 |
| 07:30 AM | 9 | 99 | 16 | 124 | 16 | 63 | 13 | 92 | 14 | 403 | 23 | 440 | 16 | 55 | 31 | 102 | 758 |
| 07:45 AM | 5 | 134 | 10 | 149 | 20 | 42 | 17 | 79 | 17 | 456 | 26 | 499 | 17 | 70 | 31 | 118 | 845 |
| Total | 26 | 389 | 44 | 459 | 63 | 163 | 56 | 282 | 56 | 1467 | 88 | 1611 | 55 | 170 | 109 | 334 | 2686 |
| 08:00 AM | 9 | 123 | 22 | 154 | 17 | 45 | 14 | 76 | 14 | 366 | 37 | 417 | 22 | 47 | 30 | 99 | 746 |
| 08:15 AM | 16 | 120 | 19 | 155 | 13 | 40 | 19 | 72 | 26 | 366 | 20 | 412 | 12 | 42 | 19 | 73 | 712 |
| 08:30 AM | 19 | 119 | 18 | 156 | 15 | 29 | 10 | 54 | 21 | 335 | 23 | 379 | 14 | 39 | 23 | 76 | 665 |
| 08:45 AM | 14 | 119 | 26 | 159 | 7 | 49 | 15 | 71 | 17 | 259 | 29 | 305 | 11 | 42 | 22 | 75 | 610 |
| Total | 58 | 481 | 85 | 624 | 52 | 163 | 58 | 273 | 78 | 1326 | 109 | 1513 | 59 | 170 | 94 | 323 | 2733 |
| Grand Total | 84 | 870 | 129 | 1083 | 115 | 326 | 114 | 555 | 134 | 2793 | 197 | 3124 | 114 | 340 | 203 | 657 | 5419 |
| Apprch % | 7.8 | 80.3 | 11.9 | | 20.7 | 58.7 | 20.5 | | 4.3 | 89.4 | 6.3 | | 17.4 | 51.8 | 30.9 | | |
| Total % | 1.6 | 16.1 | 2.4 | 20 | 2.1 | 6 | 2.1 | 10.2 | 2.5 | 51.5 | 3.6 | 57.6 | 2.1 | 6.3 | 3.7 | 12.1 | |
| PC | 77 | 803 | 121 | 1001 | 114 | 321 | 109 | 544 | 127 | 2678 | 193 | 2998 | 108 | 330 | 198 | 636 | 5179 |
| % PC | 91.7 | 92.3 | 93.8 | 92.4 | 99.1 | 98.5 | 95.6 | 98 | 94.8 | 95.9 | 98 | 96 | 94.7 | 97.1 | 97.5 | 96.8 | 95.6 |
| SU | 7 | 65 | 8 | 80 | 1 | 5 | 4 | 10 | 7 | 100 | 4 | 111 | 6 | 10 | 5 | 21 | 222 |
| % SU | 8.3 | 7.5 | 6.2 | 7.4 | 0.9 | 1.5 | 3.5 | 1.8 | 5.2 | 3.6 | 2 | 3.6 | 5.3 | 2.9 | 2.5 | 3.2 | 4.1 |
| MU | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 18 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0.9 | 0.2 | 0 | 0.5 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0.3 |

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 9 | 99 | 16 | 124 | 16 | 63 | 13 | 92 | 14 | 403 | 23 | 440 | 16 | 55 | 31 | 102 | 758 |
| 07:45 AM | 5 | 134 | 10 | 149 | 20 | 42 | 17 | 79 | 17 | 456 | 26 | 499 | 17 | 70 | 31 | 118 | 845 |
| 08:00 AM | 9 | 123 | 22 | 154 | 17 | 45 | 14 | 76 | 14 | 366 | 37 | 417 | 22 | 47 | 30 | 99 | 746 |
| 08:15 AM | 16 | 120 | 19 | 155 | 13 | 40 | 19 | 72 | 26 | 366 | 20 | 412 | 12 | 42 | 19 | 73 | 712 |
| Total Volume | 39 | 476 | 67 | 582 | 66 | 190 | 63 | 319 | 71 | 1591 | 106 | 1768 | 67 | 214 | 111 | 392 | 3061 |
| % App. Total | 6.7 | 81.8 | 11.5 | | 20.7 | 59.6 | 19.7 | | 4 | 90 | 6 | | 17.1 | 54.6 | 28.3 | | |
| PHF | .609 | .888 | .761 | .939 | .825 | .754 | .829 | .867 | .683 | .872 | .716 | .886 | .761 | .764 | .895 | .831 | .906 |

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107th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 2

Groups Printed- SU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 9 | 3 | 13 | 0 | 0 | 2 | 2 | 2 | 14 | 0 | 16 | 1 | 3 | 1 | 5 | 36 |
| 07:15 AM | 2 | 11 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 16 | 1 | 17 | 1 | 0 | 1 | 2 | 33 |
| 07:30 AM | 1 | 10 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 11 | 1 | 1 | 1 | 3 | 25 |
| 07:45 AM | 0 | 8 | 0 | 8 | 1 | 1 | 0 | 2 | 1 | 12 | 0 | 13 | 2 | 3 | 2 | 7 | 30 |
| Total | 4 | 38 | 4 | 46 | 1 | 1 | 2 | 4 | 3 | 52 | 2 | 57 | 5 | 7 | 5 | 17 | 124 |
| 08:00 AM | 0 | 7 | 2 | 9 | 0 | 1 | 0 | 1 | 0 | 15 | 1 | 16 | 0 | 0 | 0 | 0 | 26 |
| 08:15 AM | 0 | 6 | 2 | 8 | 0 | 0 | 1 | 1 | 2 | 11 | 1 | 14 | 0 | 2 | 0 | 2 | 25 |
| 08:30 AM | 1 | 7 | 0 | 8 | 0 | 1 | 0 | 1 | 1 | 12 | 0 | 13 | 0 | 1 | 0 | 1 | 23 |
| 08:45 AM | 2 | 7 | 0 | 9 | 0 | 2 | 1 | 3 | 1 | 10 | 0 | 11 | 1 | 0 | 0 | 1 | 24 |
| Total | 3 | 27 | 4 | 34 | 0 | 4 | 2 | 6 | 4 | 48 | 2 | 54 | 1 | 3 | 0 | 4 | 98 |
| Grand Total | 7 | 65 | 8 | 80 | 1 | 5 | 4 | 10 | 7 | 100 | 4 | 111 | 6 | 10 | 5 | 21 | 222 |
| Apprch % | 8.8 | 81.2 | 10 | | 10 | 50 | 40 | | 6.3 | 90.1 | 3.6 | | 28.6 | 47.6 | 23.8 | | |
| Total % | 3.2 | 29.3 | 3.6 | 36 | 0.5 | 2.3 | 1.8 | 4.5 | 3.2 | 45 | 1.8 | 50 | 2.7 | 4.5 | 2.3 | 9.5 | |

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107th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 3

Groups Printed- MU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 9 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 9 |
| Grand Total | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 18 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 100 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 11.1 | 0 | 11.1 | 0 | 0 | 5.6 | 5.6 | 0 | 83.3 | 0 | 83.3 | 0 | 0 | 0 | 0 | |

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107th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM PEDS

Site Code : 00000000

Start Date : 5/3/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 107th St Crossing East Leg | | | Halsted St Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 2 | 2 | 1 | 10 | 11 | 2 | 3 | 5 | 0 | 4 | 4 | 22 |
| 07:30 AM | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 1 | 1 | 8 |
| 07:45 AM | 0 | 0 | 0 | 1 | 5 | 6 | 0 | 2 | 2 | 0 | 2 | 2 | 10 |
| Total | 0 | 5 | 5 | 3 | 18 | 21 | 2 | 8 | 10 | 0 | 7 | 7 | 43 |
| 08:00 AM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 7 |
| 08:15 AM | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 4 | 4 | 0 | 0 | 0 | 11 |
| 08:30 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 6 | 6 | 9 |
| 08:45 AM | 0 | 5 | 5 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 2 | 2 | 13 |
| Total | 0 | 7 | 7 | 0 | 14 | 14 | 0 | 8 | 8 | 0 | 11 | 11 | 40 |
| Grand Total | 0 | 12 | 12 | 3 | 32 | 35 | 2 | 16 | 18 | 0 | 18 | 18 | 83 |
| Apprch % | 0 | 100 | | 8.6 | 91.4 | | 11.1 | 88.9 | | 0 | 100 | | |
| Total % | 0 | 14.5 | 14.5 | 3.6 | 38.6 | 42.2 | 2.4 | 19.3 | 21.7 | 0 | 21.7 | 21.7 | |

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107th St and Halsted St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/3/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 31 | 201 | 27 | 259 | 14 | 38 | 18 | 70 | 15 | 192 | 21 | 228 | 21 | 35 | 18 | 74 | 631 |
| 04:15 PM | 32 | 187 | 33 | 252 | 11 | 37 | 25 | 73 | 15 | 162 | 27 | 204 | 21 | 38 | 20 | 79 | 608 |
| 04:30 PM | 22 | 194 | 24 | 240 | 14 | 34 | 33 | 81 | 19 | 170 | 22 | 211 | 16 | 47 | 20 | 83 | 615 |
| 04:45 PM | 28 | 217 | 22 | 267 | 13 | 38 | 18 | 69 | 15 | 201 | 17 | 233 | 20 | 34 | 20 | 74 | 643 |
| Total | 113 | 799 | 106 | 1018 | 52 | 147 | 94 | 293 | 64 | 725 | 87 | 876 | 78 | 154 | 78 | 310 | 2497 |
| 05:00 PM | 23 | 167 | 30 | 220 | 14 | 45 | 22 | 81 | 21 | 181 | 32 | 234 | 18 | 49 | 25 | 92 | 627 |
| 05:15 PM | 20 | 223 | 20 | 263 | 7 | 41 | 22 | 70 | 16 | 213 | 30 | 259 | 20 | 41 | 19 | 80 | 672 |
| 05:30 PM | 20 | 217 | 36 | 273 | 16 | 36 | 22 | 74 | 22 | 189 | 30 | 241 | 36 | 36 | 32 | 104 | 692 |
| 05:45 PM | 27 | 179 | 32 | 238 | 17 | 38 | 27 | 82 | 18 | 186 | 22 | 226 | 20 | 50 | 25 | 95 | 641 |
| Total | 90 | 786 | 118 | 994 | 54 | 160 | 93 | 307 | 77 | 769 | 114 | 960 | 94 | 176 | 101 | 371 | 2632 |
| Grand Total | 203 | 1585 | 224 | 2012 | 106 | 307 | 187 | 600 | 141 | 1494 | 201 | 1836 | 172 | 330 | 179 | 681 | 5129 |
| Apprch % | 10.1 | 78.8 | 11.1 | | 17.7 | 51.2 | 31.2 | | 7.7 | 81.4 | 10.9 | | 25.3 | 48.5 | 26.3 | | |
| Total % | 4 | 30.9 | 4.4 | 39.2 | 2.1 | 6 | 3.6 | 11.7 | 2.7 | 29.1 | 3.9 | 35.8 | 3.4 | 6.4 | 3.5 | 13.3 | |
| PC | 198 | 1527 | 223 | 1948 | 105 | 305 | 185 | 595 | 141 | 1433 | 197 | 1771 | 169 | 325 | 175 | 669 | 4983 |
| % PC | 97.5 | 96.3 | 99.6 | 96.8 | 99.1 | 99.3 | 98.9 | 99.2 | 100 | 95.9 | 98 | 96.5 | 98.3 | 98.5 | 97.8 | 98.2 | 97.2 |
| SU | 4 | 56 | 1 | 61 | 1 | 2 | 2 | 5 | 0 | 59 | 4 | 63 | 3 | 5 | 3 | 11 | 140 |
| % SU | 2 | 3.5 | 0.4 | 3 | 0.9 | 0.7 | 1.1 | 0.8 | 0 | 3.9 | 2 | 3.4 | 1.7 | 1.5 | 1.7 | 1.6 | 2.7 |
| MU | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 6 |
| % MU | 0.5 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0.6 | 0.1 | 0.1 |

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|--|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 9 | 99 | 16 | 124 | 16 | 63 | 13 | 92 | 14 | 403 | 23 | 440 | 16 | 55 | 31 | 102 | 758 |
| 07:45 AM | 5 | 134 | 10 | 149 | 20 | 42 | 17 | 79 | 17 | 456 | 26 | 499 | 17 | 70 | 31 | 118 | 845 |
| 08:00 AM | 9 | 123 | 22 | 154 | 17 | 45 | 14 | 76 | 14 | 366 | 37 | 417 | 22 | 47 | 30 | 99 | 746 |
| 08:15 AM | 16 | 120 | 19 | 155 | 13 | 40 | 19 | 72 | 26 | 366 | 20 | 412 | 12 | 42 | 19 | 73 | 712 |
| Total Volume | 39 | 476 | 67 | 582 | 66 | 190 | 63 | 319 | 71 | 1591 | 106 | 1768 | 67 | 214 | 111 | 392 | 3061 |
| % App. Total | 6.7 | 81.8 | 11.5 | | 20.7 | 59.6 | 19.7 | | 4 | 90 | 6 | | 17.1 | 54.6 | 28.3 | | |
| PHF | .609 | .888 | .761 | .939 | .825 | .754 | .829 | .867 | .683 | .872 | .716 | .886 | .761 | .764 | .895 | .831 | .906 |

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107th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 6

Groups Printed- SU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 10 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 1 | 0 | 1 | 2 | 22 |
| 04:15 PM | 2 | 8 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 0 | 1 | 0 | 1 | 23 |
| 04:30 PM | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 3 | 0 | 3 | 12 |
| 04:45 PM | 1 | 10 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 1 | 0 | 1 | 2 | 19 |
| Total | 4 | 33 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 30 | 1 | 31 | 2 | 4 | 2 | 8 | 76 |
| 05:00 PM | 0 | 5 | 0 | 5 | 0 | 0 | 2 | 2 | 0 | 8 | 0 | 8 | 1 | 0 | 0 | 1 | 16 |
| 05:15 PM | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 2 | 18 |
| 05:30 PM | 0 | 5 | 1 | 6 | 1 | 2 | 0 | 3 | 0 | 8 | 2 | 10 | 0 | 0 | 0 | 0 | 19 |
| 05:45 PM | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 11 |
| Total | 0 | 23 | 1 | 24 | 1 | 2 | 2 | 5 | 0 | 29 | 3 | 32 | 1 | 1 | 1 | 3 | 64 |
| Grand Total | 4 | 56 | 1 | 61 | 1 | 2 | 2 | 5 | 0 | 59 | 4 | 63 | 3 | 5 | 3 | 11 | 140 |
| Apprch % | 6.6 | 91.8 | 1.6 | | 20 | 40 | 40 | | 0 | 93.7 | 6.3 | | 27.3 | 45.5 | 27.3 | | |
| Total % | 2.9 | 40 | 0.7 | 43.6 | 0.7 | 1.4 | 1.4 | 3.6 | 0 | 42.1 | 2.9 | 45 | 2.1 | 3.6 | 2.1 | 7.9 | |

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107th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 7

Groups Printed- MU

| | Halsted St From North | | | | 107th St From East | | | | Halsted St From South | | | | 107th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| Grand Total | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 6 |
| Apprch % | 33.3 | 66.7 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 16.7 | 33.3 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 16.7 | 16.7 | |

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107th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM PEDS

Site Code : 00000000

Start Date : 5/3/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 107th St Crossing East Leg | | | Halsted St Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 3 | 1 | 2 | 3 | 0 | 3 | 3 | 1 | 4 | 5 | 14 |
| 04:15 PM | 1 | 1 | 2 | 3 | 2 | 5 | 0 | 1 | 1 | 0 | 2 | 2 | 10 |
| 04:30 PM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 10 | 10 | 0 | 4 | 4 | 19 |
| 04:45 PM | 0 | 4 | 4 | 0 | 2 | 2 | 1 | 2 | 3 | 0 | 1 | 1 | 10 |
| Total | 1 | 11 | 12 | 4 | 8 | 12 | 1 | 16 | 17 | 1 | 11 | 12 | 53 |
| 05:00 PM | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 1 | 1 | 1 | 5 | 6 | 11 |
| 05:15 PM | 2 | 2 | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 9 |
| 05:30 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 4 | 4 | 13 |
| 05:45 PM | 0 | 7 | 7 | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 7 | 7 | 20 |
| Total | 2 | 10 | 12 | 1 | 7 | 8 | 0 | 13 | 13 | 2 | 18 | 20 | 53 |
| Grand Total | 3 | 21 | 24 | 5 | 15 | 20 | 1 | 29 | 30 | 3 | 29 | 32 | 106 |
| Apprch % | 12.5 | 87.5 | | 25 | 75 | | 3.3 | 96.7 | | 9.4 | 90.6 | | |
| Total % | 2.8 | 19.8 | 22.6 | 4.7 | 14.2 | 18.9 | 0.9 | 27.4 | 28.3 | 2.8 | 27.4 | 30.2 | |

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107th St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 3 | 20 | 2 | 25 | 4 | 20 | 2 | 26 | 3 | 44 | 4 | 51 | 4 | 14 | 4 | 22 | 124 |
| 07:15 AM | 8 | 23 | 4 | 35 | 5 | 18 | 0 | 23 | 2 | 65 | 6 | 73 | 2 | 19 | 5 | 26 | 157 |
| 07:30 AM | 11 | 40 | 3 | 54 | 7 | 20 | 0 | 27 | 1 | 78 | 8 | 87 | 16 | 25 | 18 | 59 | 227 |
| 07:45 AM | 4 | 40 | 1 | 45 | 6 | 13 | 0 | 19 | 3 | 72 | 4 | 79 | 14 | 31 | 14 | 59 | 202 |
| Total | 26 | 123 | 10 | 159 | 22 | 71 | 2 | 95 | 9 | 259 | 22 | 290 | 36 | 89 | 41 | 166 | 710 |
| 08:00 AM | 4 | 27 | 1 | 32 | 7 | 14 | 1 | 22 | 4 | 61 | 4 | 69 | 6 | 20 | 19 | 45 | 168 |
| 08:15 AM | 4 | 35 | 0 | 39 | 6 | 18 | 1 | 25 | 1 | 51 | 3 | 55 | 4 | 23 | 19 | 46 | 165 |
| 08:30 AM | 2 | 30 | 6 | 38 | 8 | 29 | 6 | 43 | 5 | 87 | 10 | 102 | 9 | 31 | 10 | 50 | 233 |
| 08:45 AM | 5 | 37 | 2 | 44 | 5 | 31 | 3 | 39 | 9 | 51 | 4 | 64 | 9 | 58 | 8 | 75 | 222 |
| Total | 15 | 129 | 9 | 153 | 26 | 92 | 11 | 129 | 19 | 250 | 21 | 290 | 28 | 132 | 56 | 216 | 788 |
| Grand Total | 41 | 252 | 19 | 312 | 48 | 163 | 13 | 224 | 28 | 509 | 43 | 580 | 64 | 221 | 97 | 382 | 1498 |
| Apprch % | 13.1 | 80.8 | 6.1 | | 21.4 | 72.8 | 5.8 | | 4.8 | 87.8 | 7.4 | | 16.8 | 57.9 | 25.4 | | |
| Total % | 2.7 | 16.8 | 1.3 | 20.8 | 3.2 | 10.9 | 0.9 | 15 | 1.9 | 34 | 2.9 | 38.7 | 4.3 | 14.8 | 6.5 | 25.5 | |
| PC | 41 | 240 | 19 | 300 | 44 | 155 | 12 | 211 | 26 | 494 | 41 | 561 | 62 | 215 | 95 | 372 | 1444 |
| % PC | 100 | 95.2 | 100 | 96.2 | 91.7 | 95.1 | 92.3 | 94.2 | 92.9 | 97.1 | 95.3 | 96.7 | 96.9 | 97.3 | 97.9 | 97.4 | 96.4 |
| SU | 0 | 12 | 0 | 12 | 4 | 8 | 1 | 13 | 2 | 15 | 2 | 19 | 0 | 6 | 2 | 8 | 52 |
| % SU | 0 | 4.8 | 0 | 3.8 | 8.3 | 4.9 | 7.7 | 5.8 | 7.1 | 2.9 | 4.7 | 3.3 | 0 | 2.7 | 2.1 | 2.1 | 3.5 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.1 | 0 | 0 | 0.5 | 0.1 |

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 4 | 27 | 1 | 32 | 7 | 14 | 1 | 22 | 4 | 61 | 4 | 69 | 6 | 20 | 19 | 45 | 168 |
| 08:15 AM | 4 | 35 | 0 | 39 | 6 | 18 | 1 | 25 | 1 | 51 | 3 | 55 | 4 | 23 | 19 | 46 | 165 |
| 08:30 AM | 2 | 30 | 6 | 38 | 8 | 29 | 6 | 43 | 5 | 87 | 10 | 102 | 9 | 31 | 10 | 50 | 233 |
| 08:45 AM | 5 | 37 | 2 | 44 | 5 | 31 | 3 | 39 | 9 | 51 | 4 | 64 | 9 | 58 | 8 | 75 | 222 |
| Total Volume | 15 | 129 | 9 | 153 | 26 | 92 | 11 | 129 | 19 | 250 | 21 | 290 | 28 | 132 | 56 | 216 | 788 |
| % App. Total | 9.8 | 84.3 | 5.9 | | 20.2 | 71.3 | 8.5 | | 6.6 | 86.2 | 7.2 | | 13 | 61.1 | 25.9 | | |
| PHF | .750 | .872 | .375 | .869 | .813 | .742 | .458 | .750 | .528 | .718 | .525 | .711 | .778 | .569 | .737 | .720 | .845 |

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107th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 1 | 6 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 1 | 1 | 2 | 9 |
| 07:45 AM | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 5 | 0 | 5 | 1 | 4 | 0 | 5 | 1 | 9 | 0 | 10 | 0 | 2 | 1 | 3 | 23 |
| 08:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 1 | 2 | 6 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 08:30 AM | 0 | 2 | 0 | 2 | 2 | 1 | 1 | 4 | 1 | 3 | 2 | 6 | 0 | 1 | 0 | 1 | 13 |
| 08:45 AM | 0 | 3 | 0 | 3 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| Total | 0 | 7 | 0 | 7 | 3 | 4 | 1 | 8 | 1 | 6 | 2 | 9 | 0 | 4 | 1 | 5 | 29 |
| Grand Total | 0 | 12 | 0 | 12 | 4 | 8 | 1 | 13 | 2 | 15 | 2 | 19 | 0 | 6 | 2 | 8 | 52 |
| Apprch % | 0 | 100 | 0 | | 30.8 | 61.5 | 7.7 | | 10.5 | 78.9 | 10.5 | | 0 | 75 | 25 | | |
| Total % | 0 | 23.1 | 0 | 23.1 | 7.7 | 15.4 | 1.9 | 25 | 3.8 | 28.8 | 3.8 | 36.5 | 0 | 11.5 | 3.8 | 15.4 | |

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107th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 100 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 100 | 0 | 0 | 100 | |

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107th St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/6/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 107th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 5 |
| Total | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 5 | 5 | 0 | 1 | 1 | 11 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 0 | 0 | 6 |
| 08:15 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:30 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 18 | 18 | 0 | 2 | 2 | 0 | 8 | 8 | 0 | 0 | 0 | 28 |
| Total | 0 | 19 | 19 | 0 | 7 | 7 | 0 | 13 | 13 | 0 | 0 | 0 | 39 |
| Grand Total | 0 | 20 | 20 | 0 | 11 | 11 | 0 | 18 | 18 | 0 | 1 | 1 | 50 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 40 | 40 | 0 | 22 | 22 | 0 | 36 | 36 | 0 | 2 | 2 | |

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107th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 10 | 73 | 1 | 84 | 5 | 22 | 4 | 31 | 2 | 27 | 0 | 29 | 2 | 30 | 9 | 41 | 185 |
| 04:15 PM | 8 | 85 | 3 | 96 | 7 | 20 | 3 | 30 | 4 | 42 | 1 | 47 | 9 | 20 | 11 | 40 | 213 |
| 04:30 PM | 18 | 83 | 7 | 108 | 5 | 14 | 2 | 21 | 5 | 47 | 5 | 57 | 5 | 19 | 12 | 36 | 222 |
| 04:45 PM | 15 | 73 | 8 | 96 | 9 | 19 | 2 | 30 | 5 | 45 | 8 | 58 | 3 | 27 | 10 | 40 | 224 |
| Total | 51 | 314 | 19 | 384 | 26 | 75 | 11 | 112 | 16 | 161 | 14 | 191 | 19 | 96 | 42 | 157 | 844 |
| 05:00 PM | 19 | 69 | 11 | 99 | 4 | 27 | 5 | 36 | 2 | 64 | 5 | 71 | 11 | 25 | 8 | 44 | 250 |
| 05:15 PM | 14 | 129 | 6 | 149 | 7 | 32 | 3 | 42 | 2 | 44 | 8 | 54 | 6 | 37 | 8 | 51 | 296 |
| 05:30 PM | 13 | 82 | 4 | 99 | 7 | 39 | 2 | 48 | 4 | 57 | 8 | 69 | 7 | 30 | 15 | 52 | 268 |
| 05:45 PM | 9 | 67 | 7 | 83 | 2 | 26 | 6 | 34 | 2 | 47 | 7 | 56 | 2 | 19 | 16 | 37 | 210 |
| Total | 55 | 347 | 28 | 430 | 20 | 124 | 16 | 160 | 10 | 212 | 28 | 250 | 26 | 111 | 47 | 184 | 1024 |
| Grand Total | 106 | 661 | 47 | 814 | 46 | 199 | 27 | 272 | 26 | 373 | 42 | 441 | 45 | 207 | 89 | 341 | 1868 |
| Apprch % | 13 | 81.2 | 5.8 | | 16.9 | 73.2 | 9.9 | | 5.9 | 84.6 | 9.5 | | 13.2 | 60.7 | 26.1 | | |
| Total % | 5.7 | 35.4 | 2.5 | 43.6 | 2.5 | 10.7 | 1.4 | 14.6 | 1.4 | 20 | 2.2 | 23.6 | 2.4 | 11.1 | 4.8 | 18.3 | |
| PC | 106 | 650 | 47 | 803 | 45 | 196 | 27 | 268 | 26 | 363 | 42 | 431 | 45 | 207 | 87 | 339 | 1841 |
| % PC | 100 | 98.3 | 100 | 98.6 | 97.8 | 98.5 | 100 | 98.5 | 100 | 97.3 | 100 | 97.7 | 100 | 100 | 97.8 | 99.4 | 98.6 |
| SU | 0 | 10 | 0 | 10 | 1 | 3 | 0 | 4 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 24 |
| % SU | 0 | 1.5 | 0 | 1.2 | 2.2 | 1.5 | 0 | 1.5 | 0 | 2.4 | 0 | 2 | 0 | 0 | 1.1 | 0.3 | 1.3 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| % MU | 0 | 0.2 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.2 | 0 | 0 | 1.1 | 0.3 | 0.2 |

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 15 | 73 | 8 | 96 | 9 | 19 | 2 | 30 | 5 | 45 | 8 | 58 | 3 | 27 | 10 | 40 | 224 |
| 05:00 PM | 19 | 69 | 11 | 99 | 4 | 27 | 5 | 36 | 2 | 64 | 5 | 71 | 11 | 25 | 8 | 44 | 250 |
| 05:15 PM | 14 | 129 | 6 | 149 | 7 | 32 | 3 | 42 | 2 | 44 | 8 | 54 | 6 | 37 | 8 | 51 | 296 |
| 05:30 PM | 13 | 82 | 4 | 99 | 7 | 39 | 2 | 48 | 4 | 57 | 8 | 69 | 7 | 30 | 15 | 52 | 268 |
| Total Volume | 61 | 353 | 29 | 443 | 27 | 117 | 12 | 156 | 13 | 210 | 29 | 252 | 27 | 119 | 41 | 187 | 1038 |
| % App. Total | 13.8 | 79.7 | 6.5 | | 17.3 | 75 | 7.7 | | 5.2 | 83.3 | 11.5 | | 14.4 | 63.6 | 21.9 | | |
| PHF | .803 | .684 | .659 | .743 | .750 | .750 | .600 | .813 | .650 | .820 | .906 | .887 | .614 | .804 | .683 | .899 | .877 |

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107th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 6 |
| 04:15 PM | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 7 | 0 | 7 | 1 | 2 | 0 | 3 | 0 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 16 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 8 |
| Grand Total | 0 | 10 | 0 | 10 | 1 | 3 | 0 | 4 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 24 |
| Apprch % | 0 | 100 | 0 | | 25 | 75 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 41.7 | 0 | 41.7 | 4.2 | 12.5 | 0 | 16.7 | 0 | 37.5 | 0 | 37.5 | 0 | 0 | 4.2 | 4.2 | |

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107th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 107th St From East | | | | Martin Luther King Dr From South | | | | 107th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 33.3 | 33.3 | |

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107th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/6/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 107th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 04:15 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 5 |
| 04:30 PM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 04:45 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| Total | 0 | 3 | 3 | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 4 | 4 | 14 |
| 05:00 PM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 4 |
| 05:15 PM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 0 | 0 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 3 |
| Total | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 10 | 10 | 0 | 2 | 2 | 18 |
| Grand Total | 0 | 4 | 4 | 0 | 9 | 9 | 0 | 13 | 13 | 0 | 6 | 6 | 32 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 12.5 | 12.5 | 0 | 28.1 | 28.1 | 0 | 40.6 | 40.6 | 0 | 18.8 | 18.8 | |

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107th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/9/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 24 | 0 | 25 | 10 | 19 | 3 | 32 | 2 | 87 | 6 | 95 | 5 | 16 | 7 | 28 | 180 |
| 07:15 AM | 6 | 31 | 0 | 37 | 5 | 31 | 6 | 42 | 2 | 91 | 10 | 103 | 4 | 31 | 18 | 53 | 235 |
| 07:30 AM | 3 | 30 | 5 | 38 | 4 | 29 | 1 | 34 | 4 | 88 | 5 | 97 | 6 | 36 | 12 | 54 | 223 |
| 07:45 AM | 3 | 57 | 0 | 60 | 14 | 28 | 5 | 47 | 7 | 108 | 7 | 122 | 10 | 45 | 17 | 72 | 301 |
| Total | 13 | 142 | 5 | 160 | 33 | 107 | 15 | 155 | 15 | 374 | 28 | 417 | 25 | 128 | 54 | 207 | 939 |
| 08:00 AM | 4 | 43 | 3 | 50 | 6 | 27 | 4 | 37 | 5 | 114 | 8 | 127 | 6 | 52 | 10 | 68 | 282 |
| 08:15 AM | 5 | 33 | 3 | 41 | 5 | 38 | 6 | 49 | 8 | 104 | 7 | 119 | 9 | 45 | 7 | 61 | 270 |
| 08:30 AM | 6 | 27 | 2 | 35 | 6 | 32 | 3 | 41 | 3 | 79 | 5 | 87 | 7 | 38 | 12 | 57 | 220 |
| 08:45 AM | 4 | 25 | 2 | 31 | 11 | 32 | 8 | 51 | 11 | 91 | 8 | 110 | 11 | 58 | 15 | 84 | 276 |
| Total | 19 | 128 | 10 | 157 | 28 | 129 | 21 | 178 | 27 | 388 | 28 | 443 | 33 | 193 | 44 | 270 | 1048 |
| Grand Total | 32 | 270 | 15 | 317 | 61 | 236 | 36 | 333 | 42 | 762 | 56 | 860 | 58 | 321 | 98 | 477 | 1987 |
| Apprch % | 10.1 | 85.2 | 4.7 | | 18.3 | 70.9 | 10.8 | | 4.9 | 88.6 | 6.5 | | 12.2 | 67.3 | 20.5 | | |
| Total % | 1.6 | 13.6 | 0.8 | 16 | 3.1 | 11.9 | 1.8 | 16.8 | 2.1 | 38.3 | 2.8 | 43.3 | 2.9 | 16.2 | 4.9 | 24 | |
| PC | 32 | 239 | 15 | 286 | 61 | 226 | 35 | 322 | 41 | 703 | 53 | 797 | 55 | 310 | 91 | 456 | 1861 |
| % PC | 100 | 88.5 | 100 | 90.2 | 100 | 95.8 | 97.2 | 96.7 | 97.6 | 92.3 | 94.6 | 92.7 | 94.8 | 96.6 | 92.9 | 95.6 | 93.7 |
| SU | 0 | 27 | 0 | 27 | 0 | 10 | 1 | 11 | 1 | 50 | 3 | 54 | 3 | 11 | 6 | 20 | 112 |
| % SU | 0 | 10 | 0 | 8.5 | 0 | 4.2 | 2.8 | 3.3 | 2.4 | 6.6 | 5.4 | 6.3 | 5.2 | 3.4 | 6.1 | 4.2 | 5.6 |
| MU | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 14 |
| % MU | 0 | 1.5 | 0 | 1.3 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 1 | 0 | 0 | 1 | 0.2 | 0.7 |

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 3 | 30 | 5 | 38 | 4 | 29 | 1 | 34 | 4 | 88 | 5 | 97 | 6 | 36 | 12 | 54 | 223 |
| 07:45 AM | 3 | 57 | 0 | 60 | 14 | 28 | 5 | 47 | 7 | 108 | 7 | 122 | 10 | 45 | 17 | 72 | 301 |
| 08:00 AM | 4 | 43 | 3 | 50 | 6 | 27 | 4 | 37 | 5 | 114 | 8 | 127 | 6 | 52 | 10 | 68 | 282 |
| 08:15 AM | 5 | 33 | 3 | 41 | 5 | 38 | 6 | 49 | 8 | 104 | 7 | 119 | 9 | 45 | 7 | 61 | 270 |
| Total Volume | 15 | 163 | 11 | 189 | 29 | 122 | 16 | 167 | 24 | 414 | 27 | 465 | 31 | 178 | 46 | 255 | 1076 |
| % App. Total | 7.9 | 86.2 | 5.8 | | 17.4 | 73.1 | 9.6 | | 5.2 | 89 | 5.8 | | 12.2 | 69.8 | 18 | | |
| PHF | .750 | .715 | .550 | .788 | .518 | .803 | .667 | .852 | .750 | .908 | .844 | .915 | .775 | .856 | .676 | .885 | .894 |

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107th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 8 | 1 | 9 | 0 | 2 | 1 | 3 | 17 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 6 | 1 | 7 | 0 | 1 | 1 | 2 | 12 |
| 07:30 AM | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 1 | 5 | 0 | 6 | 1 | 1 | 1 | 3 | 14 |
| 07:45 AM | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 3 | 0 | 3 | 18 |
| Total | 0 | 14 | 0 | 14 | 0 | 4 | 1 | 5 | 1 | 28 | 2 | 31 | 1 | 7 | 3 | 11 | 61 |
| 08:00 AM | 0 | 6 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 13 |
| 08:15 AM | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 10 | 0 | 10 | 2 | 2 | 0 | 4 | 18 |
| 08:30 AM | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 0 | 1 | 2 | 3 | 11 |
| 08:45 AM | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 4 | 0 | 0 | 1 | 1 | 9 |
| Total | 0 | 13 | 0 | 13 | 0 | 6 | 0 | 6 | 0 | 22 | 1 | 23 | 2 | 4 | 3 | 9 | 51 |
| Grand Total | 0 | 27 | 0 | 27 | 0 | 10 | 1 | 11 | 1 | 50 | 3 | 54 | 3 | 11 | 6 | 20 | 112 |
| Apprch % | 0 | 100 | 0 | | 0 | 90.9 | 9.1 | | 1.9 | 92.6 | 5.6 | | 15 | 55 | 30 | | |
| Total % | 0 | 24.1 | 0 | 24.1 | 0 | 8.9 | 0.9 | 9.8 | 0.9 | 44.6 | 2.7 | 48.2 | 2.7 | 9.8 | 5.4 | 17.9 | |

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107th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 7 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 7 |
| Grand Total | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 14 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 28.6 | 0 | 28.6 | 0 | 0 | 0 | 0 | 0 | 64.3 | 0 | 64.3 | 0 | 0 | 7.1 | 7.1 | |

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107th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 11 | 11 | 0 | 7 | 7 | 22 |
| 07:15 AM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 9 | 9 | 0 | 1 | 1 | 15 |
| 07:30 AM | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 9 | 9 | 0 | 5 | 5 | 18 |
| 07:45 AM | 0 | 3 | 3 | 1 | 2 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 12 |
| Total | 0 | 11 | 11 | 2 | 6 | 8 | 0 | 32 | 32 | 0 | 16 | 16 | 67 |
| 08:00 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 8 | 8 | 0 | 6 | 6 | 16 |
| 08:15 AM | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 9 | 9 | 0 | 3 | 3 | 22 |
| 08:30 AM | 0 | 16 | 16 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 12 | 12 | 34 |
| 08:45 AM | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 13 |
| Total | 0 | 25 | 25 | 0 | 16 | 16 | 0 | 20 | 20 | 0 | 24 | 24 | 85 |
| Grand Total | 0 | 36 | 36 | 2 | 22 | 24 | 0 | 52 | 52 | 0 | 40 | 40 | 152 |
| Apprch % | 0 | 100 | | 8.3 | 91.7 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 23.7 | 23.7 | 1.3 | 14.5 | 15.8 | 0 | 34.2 | 34.2 | 0 | 26.3 | 26.3 | |

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107th St and Michigan Ave
Chicago, IL
4:00PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/9/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 10 | 66 | 4 | 80 | 5 | 39 | 4 | 48 | 3 | 72 | 3 | 78 | 17 | 45 | 19 | 81 | 287 |
| 04:15 PM | 11 | 60 | 8 | 79 | 10 | 26 | 9 | 45 | 6 | 64 | 8 | 78 | 11 | 41 | 13 | 65 | 267 |
| 04:30 PM | 3 | 76 | 3 | 82 | 5 | 37 | 4 | 46 | 8 | 66 | 14 | 88 | 13 | 51 | 15 | 79 | 295 |
| 04:45 PM | 6 | 74 | 4 | 84 | 8 | 21 | 5 | 34 | 12 | 67 | 12 | 91 | 11 | 43 | 13 | 67 | 276 |
| Total | 30 | 276 | 19 | 325 | 28 | 123 | 22 | 173 | 29 | 269 | 37 | 335 | 52 | 180 | 60 | 292 | 1125 |
| 05:00 PM | 9 | 73 | 9 | 91 | 13 | 29 | 8 | 50 | 4 | 65 | 8 | 77 | 14 | 33 | 14 | 61 | 279 |
| 05:15 PM | 8 | 87 | 6 | 101 | 6 | 35 | 5 | 46 | 2 | 61 | 6 | 69 | 10 | 29 | 14 | 53 | 269 |
| 05:30 PM | 10 | 77 | 8 | 95 | 4 | 39 | 5 | 48 | 3 | 57 | 4 | 64 | 7 | 39 | 15 | 61 | 268 |
| 05:45 PM | 6 | 79 | 7 | 92 | 7 | 29 | 3 | 39 | 7 | 55 | 5 | 67 | 7 | 52 | 18 | 77 | 275 |
| Total | 33 | 316 | 30 | 379 | 30 | 132 | 21 | 183 | 16 | 238 | 23 | 277 | 38 | 153 | 61 | 252 | 1091 |
| Grand Total | 63 | 592 | 49 | 704 | 58 | 255 | 43 | 356 | 45 | 507 | 60 | 612 | 90 | 333 | 121 | 544 | 2216 |
| Apprch % | 8.9 | 84.1 | 7 | | 16.3 | 71.6 | 12.1 | | 7.4 | 82.8 | 9.8 | | 16.5 | 61.2 | 22.2 | | |
| Total % | 2.8 | 26.7 | 2.2 | 31.8 | 2.6 | 11.5 | 1.9 | 16.1 | 2 | 22.9 | 2.7 | 27.6 | 4.1 | 15 | 5.5 | 24.5 | |
| PC | 63 | 565 | 49 | 677 | 56 | 252 | 43 | 351 | 44 | 480 | 58 | 582 | 90 | 331 | 119 | 540 | 2150 |
| % PC | 100 | 95.4 | 100 | 96.2 | 96.6 | 98.8 | 100 | 98.6 | 97.8 | 94.7 | 96.7 | 95.1 | 100 | 99.4 | 98.3 | 99.3 | 97 |
| SU | 0 | 27 | 0 | 27 | 2 | 3 | 0 | 5 | 1 | 27 | 2 | 30 | 0 | 2 | 2 | 4 | 66 |
| % SU | 0 | 4.6 | 0 | 3.8 | 3.4 | 1.2 | 0 | 1.4 | 2.2 | 5.3 | 3.3 | 4.9 | 0 | 0.6 | 1.7 | 0.7 | 3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 3 | 30 | 5 | 38 | 4 | 29 | 1 | 34 | 4 | 88 | 5 | 97 | 6 | 36 | 12 | 54 | 223 |
| 07:45 AM | 3 | 57 | 0 | 60 | 14 | 28 | 5 | 47 | 7 | 108 | 7 | 122 | 10 | 45 | 17 | 72 | 301 |
| 08:00 AM | 4 | 43 | 3 | 50 | 6 | 27 | 4 | 37 | 5 | 114 | 8 | 127 | 6 | 52 | 10 | 68 | 282 |
| 08:15 AM | 5 | 33 | 3 | 41 | 5 | 38 | 6 | 49 | 8 | 104 | 7 | 119 | 9 | 45 | 7 | 61 | 270 |
| Total Volume | 15 | 163 | 11 | 189 | 29 | 122 | 16 | 167 | 24 | 414 | 27 | 465 | 31 | 178 | 46 | 255 | 1076 |
| % App. Total | 7.9 | 86.2 | 5.8 | | 17.4 | 73.1 | 9.6 | | 5.2 | 89 | 5.8 | | 12.2 | 69.8 | 18 | | |
| PHF | .750 | .715 | .550 | .788 | .518 | .803 | .667 | .852 | .750 | .908 | .844 | .915 | .775 | .856 | .676 | .885 | .894 |

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773-283-2600 Fax: 773-283-2602

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107th St and Michigan Ave

Chicago, IL

4:00PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 6 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 12 |
| 04:15 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 7 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 9 |
| 04:45 PM | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 9 |
| Total | 0 | 15 | 0 | 15 | 1 | 2 | 0 | 3 | 1 | 15 | 1 | 17 | 0 | 1 | 1 | 2 | 37 |
| 05:00 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 5 |
| 05:15 PM | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 9 |
| 05:30 PM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 8 |
| 05:45 PM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 7 |
| Total | 0 | 12 | 0 | 12 | 1 | 1 | 0 | 2 | 0 | 12 | 1 | 13 | 0 | 1 | 1 | 2 | 29 |
| Grand Total | 0 | 27 | 0 | 27 | 2 | 3 | 0 | 5 | 1 | 27 | 2 | 30 | 0 | 2 | 2 | 4 | 66 |
| Apprch % | 0 | 100 | 0 | | 40 | 60 | 0 | | 3.3 | 90 | 6.7 | | 0 | 50 | 50 | | |
| Total % | 0 | 40.9 | 0 | 40.9 | 3 | 4.5 | 0 | 7.6 | 1.5 | 40.9 | 3 | 45.5 | 0 | 3 | 3 | 6.1 | |

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107th St and Michigan Ave

Chicago, IL

4:00PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 107th St From East | | | | Michigan Ave From South | | | | 107th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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107th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 9 | 9 | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 7 | 7 | 25 |
| 04:15 PM | 0 | 8 | 8 | 1 | 5 | 6 | 0 | 4 | 4 | 0 | 10 | 10 | 28 |
| 04:30 PM | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 10 | 10 | 22 |
| 04:45 PM | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 6 | 6 | 0 | 4 | 4 | 14 |
| Total | 0 | 18 | 18 | 2 | 16 | 18 | 0 | 22 | 22 | 0 | 31 | 31 | 89 |
| 05:00 PM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 4 | 4 | 16 |
| 05:15 PM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 3 | 3 | 7 |
| 05:30 PM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 8 | 8 | 0 | 15 | 15 | 28 |
| 05:45 PM | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 4 | 4 | 10 |
| Total | 0 | 11 | 11 | 0 | 7 | 7 | 0 | 17 | 17 | 0 | 26 | 26 | 61 |
| Grand Total | 0 | 29 | 29 | 2 | 23 | 25 | 0 | 39 | 39 | 0 | 57 | 57 | 150 |
| Apprch % | 0 | 100 | | 8 | 92 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 19.3 | 19.3 | 1.3 | 15.3 | 16.7 | 0 | 26 | 26 | 0 | 38 | 38 | |

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107th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 1

Groups Printed- PC - SU - MU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 9 | 0 | 11 | 1 | 19 | 2 | 22 | 4 | 68 | 7 | 79 | 3 | 25 | 7 | 35 | 147 |
| 07:15 AM | 2 | 15 | 6 | 23 | 3 | 34 | 3 | 40 | 9 | 60 | 5 | 74 | 3 | 26 | 8 | 37 | 174 |
| 07:30 AM | 5 | 18 | 1 | 24 | 3 | 39 | 2 | 44 | 4 | 63 | 7 | 74 | 3 | 44 | 6 | 53 | 195 |
| 07:45 AM | 3 | 25 | 1 | 29 | 7 | 41 | 2 | 50 | 5 | 73 | 4 | 82 | 8 | 57 | 4 | 69 | 230 |
| Total | 12 | 67 | 8 | 87 | 14 | 133 | 9 | 156 | 22 | 264 | 23 | 309 | 17 | 152 | 25 | 194 | 746 |
| 08:00 AM | 6 | 16 | 5 | 27 | 3 | 37 | 0 | 40 | 6 | 66 | 13 | 85 | 9 | 36 | 5 | 50 | 202 |
| 08:15 AM | 3 | 27 | 8 | 38 | 3 | 45 | 5 | 53 | 11 | 94 | 9 | 114 | 5 | 44 | 9 | 58 | 263 |
| 08:30 AM | 4 | 23 | 2 | 29 | 3 | 60 | 5 | 68 | 6 | 72 | 8 | 86 | 7 | 30 | 11 | 48 | 231 |
| 08:45 AM | 7 | 31 | 4 | 42 | 5 | 56 | 6 | 67 | 3 | 69 | 10 | 82 | 6 | 56 | 15 | 77 | 268 |
| Total | 20 | 97 | 19 | 136 | 14 | 198 | 16 | 228 | 26 | 301 | 40 | 367 | 27 | 166 | 40 | 233 | 964 |
| Grand Total | 32 | 164 | 27 | 223 | 28 | 331 | 25 | 384 | 48 | 565 | 63 | 676 | 44 | 318 | 65 | 427 | 1710 |
| Apprch % | 14.3 | 73.5 | 12.1 | | 7.3 | 86.2 | 6.5 | | 7.1 | 83.6 | 9.3 | | 10.3 | 74.5 | 15.2 | | |
| Total % | 1.9 | 9.6 | 1.6 | 13 | 1.6 | 19.4 | 1.5 | 22.5 | 2.8 | 33 | 3.7 | 39.5 | 2.6 | 18.6 | 3.8 | 25 | |
| PC | 31 | 150 | 25 | 206 | 26 | 324 | 23 | 373 | 47 | 550 | 60 | 657 | 43 | 304 | 63 | 410 | 1646 |
| % PC | 96.9 | 91.5 | 92.6 | 92.4 | 92.9 | 97.9 | 92 | 97.1 | 97.9 | 97.3 | 95.2 | 97.2 | 97.7 | 95.6 | 96.9 | 96 | 96.3 |
| SU | 1 | 13 | 2 | 16 | 2 | 7 | 2 | 11 | 1 | 12 | 3 | 16 | 1 | 14 | 2 | 17 | 60 |
| % SU | 3.1 | 7.9 | 7.4 | 7.2 | 7.1 | 2.1 | 8 | 2.9 | 2.1 | 2.1 | 4.8 | 2.4 | 2.3 | 4.4 | 3.1 | 4 | 3.5 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| % MU | 0 | 0.6 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0.2 |

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 6 | 16 | 5 | 27 | 3 | 37 | 0 | 40 | 6 | 66 | 13 | 85 | 9 | 36 | 5 | 50 | 202 |
| 08:15 AM | 3 | 27 | 8 | 38 | 3 | 45 | 5 | 53 | 11 | 94 | 9 | 114 | 5 | 44 | 9 | 58 | 263 |
| 08:30 AM | 4 | 23 | 2 | 29 | 3 | 60 | 5 | 68 | 6 | 72 | 8 | 86 | 7 | 30 | 11 | 48 | 231 |
| 08:45 AM | 7 | 31 | 4 | 42 | 5 | 56 | 6 | 67 | 3 | 69 | 10 | 82 | 6 | 56 | 15 | 77 | 268 |
| Total Volume | 20 | 97 | 19 | 136 | 14 | 198 | 16 | 228 | 26 | 301 | 40 | 367 | 27 | 166 | 40 | 233 | 964 |
| % App. Total | 14.7 | 71.3 | 14 | | 6.1 | 86.8 | 7 | | 7.1 | 82 | 10.9 | | 11.6 | 71.2 | 17.2 | | |
| PHF | .714 | .782 | .594 | .810 | .700 | .825 | .667 | .838 | .591 | .801 | .769 | .805 | .750 | .741 | .667 | .756 | .899 |

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107th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 2

Groups Printed- SU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 2 | 1 | 3 | 8 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 2 | 0 | 2 | 5 |
| 07:30 AM | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 7 |
| 07:45 AM | 0 | 4 | 0 | 4 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 8 |
| Total | 0 | 5 | 1 | 6 | 0 | 2 | 2 | 4 | 1 | 8 | 0 | 9 | 0 | 8 | 1 | 9 | 28 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 7 |
| 08:15 AM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 6 |
| 08:30 AM | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 6 |
| 08:45 AM | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 2 | 1 | 3 | 1 | 3 | 0 | 4 | 13 |
| Total | 1 | 8 | 1 | 10 | 2 | 5 | 0 | 7 | 0 | 4 | 3 | 7 | 1 | 6 | 1 | 8 | 32 |
| Grand Total | 1 | 13 | 2 | 16 | 2 | 7 | 2 | 11 | 1 | 12 | 3 | 16 | 1 | 14 | 2 | 17 | 60 |
| Apprch % | 6.2 | 81.2 | 12.5 | | 18.2 | 63.6 | 18.2 | | 6.2 | 75 | 18.8 | | 5.9 | 82.4 | 11.8 | | |
| Total % | 1.7 | 21.7 | 3.3 | 26.7 | 3.3 | 11.7 | 3.3 | 18.3 | 1.7 | 20 | 5 | 26.7 | 1.7 | 23.3 | 3.3 | 28.3 | |

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107th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 3

Groups Printed- MU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 4 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 25 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 75 | 0 | 0 | 0 | 0 | |

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107th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/12/2012

Page No : 4

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 107th St Crossing East Leg | | | State St Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 1 | 8 | 6 | 0 | 6 | 16 |
| 07:15 AM | 6 | 5 | 11 | 3 | 2 | 5 | 5 | 8 | 13 | 8 | 2 | 10 | 39 |
| 07:30 AM | 0 | 2 | 2 | 1 | 0 | 1 | 7 | 2 | 9 | 6 | 4 | 10 | 22 |
| 07:45 AM | 1 | 9 | 10 | 1 | 0 | 1 | 4 | 3 | 7 | 4 | 5 | 9 | 27 |
| Total | 7 | 16 | 23 | 7 | 2 | 9 | 23 | 14 | 37 | 24 | 11 | 35 | 104 |
| 08:00 AM | 5 | 12 | 17 | 0 | 0 | 0 | 12 | 0 | 12 | 5 | 3 | 8 | 37 |
| 08:15 AM | 8 | 12 | 20 | 5 | 0 | 5 | 9 | 1 | 10 | 8 | 6 | 14 | 49 |
| 08:30 AM | 1 | 4 | 5 | 5 | 0 | 5 | 7 | 1 | 8 | 11 | 0 | 11 | 29 |
| 08:45 AM | 4 | 1 | 5 | 6 | 0 | 6 | 9 | 5 | 14 | 15 | 3 | 18 | 43 |
| Total | 18 | 29 | 47 | 16 | 0 | 16 | 37 | 7 | 44 | 39 | 12 | 51 | 158 |
| Grand Total | 25 | 45 | 70 | 23 | 2 | 25 | 60 | 21 | 81 | 63 | 23 | 86 | 262 |
| Apprch % | 35.7 | 64.3 | | 92 | 8 | | 74.1 | 25.9 | | 73.3 | 26.7 | | |
| Total % | 9.5 | 17.2 | 26.7 | 8.8 | 0.8 | 9.5 | 22.9 | 8 | 30.9 | 24 | 8.8 | 32.8 | |

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107th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 5

Groups Printed- PC - SU - MU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 5 | 49 | 5 | 59 | 8 | 39 | 6 | 53 | 11 | 49 | 9 | 69 | 7 | 33 | 7 | 47 | 228 |
| 04:15 PM | 5 | 50 | 7 | 62 | 4 | 46 | 7 | 57 | 9 | 42 | 12 | 63 | 8 | 44 | 8 | 60 | 242 |
| 04:30 PM | 5 | 50 | 8 | 63 | 7 | 35 | 4 | 46 | 17 | 55 | 9 | 81 | 11 | 48 | 4 | 63 | 253 |
| 04:45 PM | 6 | 36 | 6 | 48 | 6 | 52 | 12 | 70 | 9 | 43 | 13 | 65 | 9 | 47 | 6 | 62 | 245 |
| Total | 21 | 185 | 26 | 232 | 25 | 172 | 29 | 226 | 46 | 189 | 43 | 278 | 35 | 172 | 25 | 232 | 968 |
| 05:00 PM | 7 | 41 | 8 | 56 | 4 | 37 | 10 | 51 | 6 | 49 | 11 | 66 | 10 | 43 | 0 | 53 | 226 |
| 05:15 PM | 5 | 47 | 11 | 63 | 6 | 49 | 2 | 57 | 8 | 42 | 8 | 58 | 6 | 39 | 8 | 53 | 231 |
| 05:30 PM | 12 | 41 | 8 | 61 | 3 | 45 | 5 | 53 | 8 | 39 | 10 | 57 | 11 | 57 | 7 | 75 | 246 |
| 05:45 PM | 9 | 51 | 6 | 66 | 5 | 48 | 8 | 61 | 9 | 65 | 9 | 83 | 7 | 40 | 8 | 55 | 265 |
| Total | 33 | 180 | 33 | 246 | 18 | 179 | 25 | 222 | 31 | 195 | 38 | 264 | 34 | 179 | 23 | 236 | 968 |
| Grand Total | 54 | 365 | 59 | 478 | 43 | 351 | 54 | 448 | 77 | 384 | 81 | 542 | 69 | 351 | 48 | 468 | 1936 |
| Apprch % | 11.3 | 76.4 | 12.3 | | 9.6 | 78.3 | 12.1 | | 14.2 | 70.8 | 14.9 | | 14.7 | 75 | 10.3 | | |
| Total % | 2.8 | 18.9 | 3 | 24.7 | 2.2 | 18.1 | 2.8 | 23.1 | 4 | 19.8 | 4.2 | 28 | 3.6 | 18.1 | 2.5 | 24.2 | |
| PC | 52 | 357 | 56 | 465 | 43 | 349 | 54 | 446 | 77 | 383 | 79 | 539 | 69 | 347 | 47 | 463 | 1913 |
| % PC | 96.3 | 97.8 | 94.9 | 97.3 | 100 | 99.4 | 100 | 99.6 | 100 | 99.7 | 97.5 | 99.4 | 100 | 98.9 | 97.9 | 98.9 | 98.8 |
| SU | 2 | 8 | 3 | 13 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 4 | 1 | 5 | 22 |
| % SU | 3.7 | 2.2 | 5.1 | 2.7 | 0 | 0.3 | 0 | 0.2 | 0 | 0.3 | 2.5 | 0.6 | 0 | 1.1 | 2.1 | 1.1 | 1.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 5 | 49 | 5 | 59 | 8 | 39 | 6 | 53 | 11 | 49 | 9 | 69 | 7 | 33 | 7 | 47 | 228 |
| 04:15 PM | 5 | 50 | 7 | 62 | 4 | 46 | 7 | 57 | 9 | 42 | 12 | 63 | 8 | 44 | 8 | 60 | 242 |
| 04:30 PM | 5 | 50 | 8 | 63 | 7 | 35 | 4 | 46 | 17 | 55 | 9 | 81 | 11 | 48 | 4 | 63 | 253 |
| 04:45 PM | 6 | 36 | 6 | 48 | 6 | 52 | 12 | 70 | 9 | 43 | 13 | 65 | 9 | 47 | 6 | 62 | 245 |
| Total Volume | 21 | 185 | 26 | 232 | 25 | 172 | 29 | 226 | 46 | 189 | 43 | 278 | 35 | 172 | 25 | 232 | 968 |
| % App. Total | 9.1 | 79.7 | 11.2 | | 11.1 | 76.1 | 12.8 | | 16.5 | 68 | 15.5 | | 15.1 | 74.1 | 10.8 | | |
| PHF | .875 | .925 | .813 | .921 | .781 | .827 | .604 | .807 | .676 | .859 | .827 | .858 | .795 | .896 | .781 | .921 | .957 |

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107th St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 6

Groups Printed- SU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:15 PM | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| Total | 2 | 6 | 2 | 10 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 14 |
| 05:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:15 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 1 | 3 | 8 |
| Grand Total | 2 | 8 | 3 | 13 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 4 | 1 | 5 | 22 |
| Apprch % | 15.4 | 61.5 | 23.1 | | 0 | 100 | 0 | | 0 | 33.3 | 66.7 | | 0 | 80 | 20 | | |
| Total % | 9.1 | 36.4 | 13.6 | 59.1 | 0 | 4.5 | 0 | 4.5 | 0 | 4.5 | 9.1 | 13.6 | 0 | 18.2 | 4.5 | 22.7 | |

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107th St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 7

Groups Printed- MU

| | State St From North | | | | 107th St From East | | | | State St From South | | | | 107th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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107th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/12/2012
Page No : 8

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 107th St Crossing East Leg | | | State St Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 4 | 4 | 8 | 6 | 0 | 6 | 9 | 10 | 19 | 7 | 1 | 8 | 41 |
| 04:15 PM | 7 | 5 | 12 | 7 | 0 | 7 | 12 | 0 | 12 | 8 | 1 | 9 | 40 |
| 04:30 PM | 8 | 10 | 18 | 4 | 0 | 4 | 9 | 3 | 12 | 4 | 0 | 4 | 38 |
| 04:45 PM | 5 | 4 | 9 | 12 | 0 | 12 | 13 | 0 | 13 | 6 | 3 | 9 | 43 |
| Total | 24 | 23 | 47 | 29 | 0 | 29 | 43 | 13 | 56 | 25 | 5 | 30 | 162 |
| 05:00 PM | 8 | 5 | 13 | 10 | 0 | 10 | 11 | 4 | 15 | 0 | 0 | 0 | 38 |
| 05:15 PM | 10 | 5 | 15 | 2 | 0 | 2 | 8 | 4 | 12 | 7 | 2 | 9 | 38 |
| 05:30 PM | 8 | 4 | 12 | 5 | 0 | 5 | 8 | 4 | 12 | 7 | 0 | 7 | 36 |
| 05:45 PM | 6 | 6 | 12 | 8 | 0 | 8 | 9 | 5 | 14 | 8 | 0 | 8 | 42 |
| Total | 32 | 20 | 52 | 25 | 0 | 25 | 36 | 17 | 53 | 22 | 2 | 24 | 154 |
| Grand Total | 56 | 43 | 99 | 54 | 0 | 54 | 79 | 30 | 109 | 47 | 7 | 54 | 316 |
| Apprch % | 56.6 | 43.4 | | 100 | 0 | | 72.5 | 27.5 | | 87 | 13 | | |
| Total % | 17.7 | 13.6 | 31.3 | 17.1 | 0 | 17.1 | 25 | 9.5 | 34.5 | 14.9 | 2.2 | 17.1 | |

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107th St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/7/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 24 | 2 | 31 | 3 | 28 | 1 | 32 | 5 | 20 | 7 | 32 | 2 | 41 | 6 | 49 | 144 |
| 07:15 AM | 3 | 21 | 3 | 27 | 0 | 34 | 2 | 36 | 3 | 32 | 3 | 38 | 1 | 33 | 9 | 43 | 144 |
| 07:30 AM | 4 | 19 | 5 | 28 | 4 | 39 | 3 | 46 | 6 | 42 | 2 | 50 | 0 | 66 | 6 | 72 | 196 |
| 07:45 AM | 5 | 37 | 7 | 49 | 1 | 40 | 2 | 43 | 6 | 43 | 3 | 52 | 2 | 49 | 8 | 59 | 203 |
| Total | 17 | 101 | 17 | 135 | 8 | 141 | 8 | 157 | 20 | 137 | 15 | 172 | 5 | 189 | 29 | 223 | 687 |
| 08:00 AM | 3 | 40 | 7 | 50 | 3 | 36 | 5 | 44 | 5 | 35 | 7 | 47 | 7 | 46 | 9 | 62 | 203 |
| 08:15 AM | 7 | 34 | 9 | 50 | 1 | 34 | 5 | 40 | 7 | 26 | 4 | 37 | 6 | 51 | 3 | 60 | 187 |
| 08:30 AM | 10 | 28 | 3 | 41 | 1 | 35 | 3 | 39 | 7 | 31 | 2 | 40 | 4 | 40 | 11 | 55 | 175 |
| 08:45 AM | 5 | 37 | 6 | 48 | 3 | 33 | 5 | 41 | 8 | 38 | 7 | 53 | 6 | 50 | 6 | 62 | 204 |
| Total | 25 | 139 | 25 | 189 | 8 | 138 | 18 | 164 | 27 | 130 | 20 | 177 | 23 | 187 | 29 | 239 | 769 |
| Grand Total | 42 | 240 | 42 | 324 | 16 | 279 | 26 | 321 | 47 | 267 | 35 | 349 | 28 | 376 | 58 | 462 | 1456 |
| Apprch % | 13 | 74.1 | 13 | | 5 | 86.9 | 8.1 | | 13.5 | 76.5 | 10 | | 6.1 | 81.4 | 12.6 | | |
| Total % | 2.9 | 16.5 | 2.9 | 22.3 | 1.1 | 19.2 | 1.8 | 22 | 3.2 | 18.3 | 2.4 | 24 | 1.9 | 25.8 | 4 | 31.7 | |
| PC | 40 | 231 | 42 | 313 | 16 | 275 | 22 | 313 | 42 | 251 | 32 | 325 | 27 | 367 | 54 | 448 | 1399 |
| % PC | 95.2 | 96.2 | 100 | 96.6 | 100 | 98.6 | 84.6 | 97.5 | 89.4 | 94 | 91.4 | 93.1 | 96.4 | 97.6 | 93.1 | 97 | 96.1 |
| SU | 2 | 8 | 0 | 10 | 0 | 3 | 4 | 7 | 5 | 15 | 3 | 23 | 1 | 9 | 4 | 14 | 54 |
| % SU | 4.8 | 3.3 | 0 | 3.1 | 0 | 1.1 | 15.4 | 2.2 | 10.6 | 5.6 | 8.6 | 6.6 | 3.6 | 2.4 | 6.9 | 3 | 3.7 |
| MU | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| % MU | 0 | 0.4 | 0 | 0.3 | 0 | 0.4 | 0 | 0.3 | 0 | 0.4 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0.2 |

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 4 | 19 | 5 | 28 | 4 | 39 | 3 | 46 | 6 | 42 | 2 | 50 | 0 | 66 | 6 | 72 | 196 |
| 07:45 AM | 5 | 37 | 7 | 49 | 1 | 40 | 2 | 43 | 6 | 43 | 3 | 52 | 2 | 49 | 8 | 59 | 203 |
| 08:00 AM | 3 | 40 | 7 | 50 | 3 | 36 | 5 | 44 | 5 | 35 | 7 | 47 | 7 | 46 | 9 | 62 | 203 |
| 08:15 AM | 7 | 34 | 9 | 50 | 1 | 34 | 5 | 40 | 7 | 26 | 4 | 37 | 6 | 51 | 3 | 60 | 187 |
| Total Volume | 19 | 130 | 28 | 177 | 9 | 149 | 15 | 173 | 24 | 146 | 16 | 186 | 15 | 212 | 26 | 253 | 789 |
| % App. Total | 10.7 | 73.4 | 15.8 | | 5.2 | 86.1 | 8.7 | | 12.9 | 78.5 | 8.6 | | 5.9 | 83.8 | 10.3 | | |
| PHF | .679 | .813 | .778 | .885 | .563 | .931 | .750 | .940 | .857 | .849 | .571 | .894 | .536 | .803 | .722 | .878 | .972 |

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107th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 1 | 2 | 2 | 5 | 10 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 4 | 0 | 6 | 0 | 1 | 0 | 1 | 9 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 5 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 5 | 0 | 1 | 0 | 1 | 7 |
| Total | 1 | 3 | 0 | 4 | 0 | 2 | 1 | 3 | 4 | 10 | 1 | 15 | 1 | 5 | 3 | 9 | 31 |
| 08:00 AM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 5 |
| 08:15 AM | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 1 | 6 |
| 08:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 3 | 1 | 4 | 0 | 1 | 1 | 2 | 8 |
| 08:45 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 4 |
| Total | 1 | 5 | 0 | 6 | 0 | 1 | 3 | 4 | 1 | 5 | 2 | 8 | 0 | 4 | 1 | 5 | 23 |
| Grand Total | 2 | 8 | 0 | 10 | 0 | 3 | 4 | 7 | 5 | 15 | 3 | 23 | 1 | 9 | 4 | 14 | 54 |
| Apprch % | 20 | 80 | 0 | | 0 | 42.9 | 57.1 | | 21.7 | 65.2 | 13 | | 7.1 | 64.3 | 28.6 | | |
| Total % | 3.7 | 14.8 | 0 | 18.5 | 0 | 5.6 | 7.4 | 13 | 9.3 | 27.8 | 5.6 | 42.6 | 1.9 | 16.7 | 7.4 | 25.9 | |

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107th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 33.3 | 0 | 33.3 | 0 | 33.3 | 0 | 33.3 | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | |

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107th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/7/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 2 | 2 | 6 |
| 07:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 4 |
| 07:30 AM | 0 | 2 | 2 | 0 | 7 | 7 | 2 | 1 | 3 | 0 | 0 | 0 | 12 |
| 07:45 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 4 |
| Total | 0 | 4 | 4 | 0 | 12 | 12 | 2 | 5 | 7 | 0 | 3 | 3 | 26 |
| 08:00 AM | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 1 | 1 | 7 |
| 08:15 AM | 0 | 0 | 0 | 0 | 23 | 23 | 1 | 7 | 8 | 0 | 6 | 6 | 37 |
| 08:30 AM | 0 | 1 | 1 | 0 | 7 | 7 | 1 | 8 | 9 | 0 | 4 | 4 | 21 |
| 08:45 AM | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 4 | 4 | 0 | 1 | 1 | 14 |
| Total | 0 | 5 | 5 | 0 | 40 | 40 | 2 | 20 | 22 | 0 | 12 | 12 | 79 |
| Grand Total | 0 | 9 | 9 | 0 | 52 | 52 | 4 | 25 | 29 | 0 | 15 | 15 | 105 |
| Apprch % | 0 | 100 | | 0 | 100 | | 13.8 | 86.2 | | 0 | 100 | | |
| Total % | 0 | 8.6 | 8.6 | 0 | 49.5 | 49.5 | 3.8 | 23.8 | 27.6 | 0 | 14.3 | 14.3 | |

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107th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/7/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 6 | 59 | 5 | 70 | 1 | 37 | 4 | 42 | 9 | 35 | 6 | 50 | 8 | 50 | 5 | 63 | 225 |
| 04:15 PM | 11 | 51 | 6 | 68 | 4 | 45 | 4 | 53 | 9 | 23 | 3 | 35 | 6 | 52 | 9 | 67 | 223 |
| 04:30 PM | 11 | 49 | 8 | 68 | 5 | 25 | 6 | 36 | 7 | 16 | 6 | 29 | 4 | 39 | 4 | 47 | 180 |
| 04:45 PM | 5 | 51 | 0 | 56 | 5 | 43 | 6 | 54 | 2 | 30 | 5 | 37 | 5 | 47 | 11 | 63 | 210 |
| Total | 33 | 210 | 19 | 262 | 15 | 150 | 20 | 185 | 27 | 104 | 20 | 151 | 23 | 188 | 29 | 240 | 838 |
| 05:00 PM | 19 | 59 | 7 | 85 | 6 | 36 | 3 | 45 | 8 | 28 | 4 | 40 | 5 | 47 | 8 | 60 | 230 |
| 05:15 PM | 8 | 67 | 9 | 84 | 4 | 44 | 3 | 51 | 7 | 32 | 3 | 42 | 15 | 49 | 5 | 69 | 246 |
| 05:30 PM | 11 | 60 | 9 | 80 | 4 | 43 | 7 | 54 | 11 | 28 | 6 | 45 | 8 | 41 | 5 | 54 | 233 |
| 05:45 PM | 9 | 53 | 10 | 72 | 6 | 50 | 7 | 63 | 5 | 27 | 5 | 37 | 5 | 36 | 3 | 44 | 216 |
| Total | 47 | 239 | 35 | 321 | 20 | 173 | 20 | 213 | 31 | 115 | 18 | 164 | 33 | 173 | 21 | 227 | 925 |
| Grand Total | 80 | 449 | 54 | 583 | 35 | 323 | 40 | 398 | 58 | 219 | 38 | 315 | 56 | 361 | 50 | 467 | 1763 |
| Apprch % | 13.7 | 77 | 9.3 | | 8.8 | 81.2 | 10.1 | | 18.4 | 69.5 | 12.1 | | 12 | 77.3 | 10.7 | | |
| Total % | 4.5 | 25.5 | 3.1 | 33.1 | 2 | 18.3 | 2.3 | 22.6 | 3.3 | 12.4 | 2.2 | 17.9 | 3.2 | 20.5 | 2.8 | 26.5 | |
| PC | 80 | 444 | 54 | 578 | 35 | 321 | 39 | 395 | 58 | 214 | 35 | 307 | 53 | 360 | 50 | 463 | 1743 |
| % PC | 100 | 98.9 | 100 | 99.1 | 100 | 99.4 | 97.5 | 99.2 | 100 | 97.7 | 92.1 | 97.5 | 94.6 | 99.7 | 100 | 99.1 | 98.9 |
| SU | 0 | 5 | 0 | 5 | 0 | 2 | 1 | 3 | 0 | 5 | 3 | 8 | 3 | 1 | 0 | 4 | 20 |
| % SU | 0 | 1.1 | 0 | 0.9 | 0 | 0.6 | 2.5 | 0.8 | 0 | 2.3 | 7.9 | 2.5 | 5.4 | 0.3 | 0 | 0.9 | 1.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 19 | 59 | 7 | 85 | 6 | 36 | 3 | 45 | 8 | 28 | 4 | 40 | 5 | 47 | 8 | 60 | 230 |
| 05:15 PM | 8 | 67 | 9 | 84 | 4 | 44 | 3 | 51 | 7 | 32 | 3 | 42 | 15 | 49 | 5 | 69 | 246 |
| 05:30 PM | 11 | 60 | 9 | 80 | 4 | 43 | 7 | 54 | 11 | 28 | 6 | 45 | 8 | 41 | 5 | 54 | 233 |
| 05:45 PM | 9 | 53 | 10 | 72 | 6 | 50 | 7 | 63 | 5 | 27 | 5 | 37 | 5 | 36 | 3 | 44 | 216 |
| Total Volume | 47 | 239 | 35 | 321 | 20 | 173 | 20 | 213 | 31 | 115 | 18 | 164 | 33 | 173 | 21 | 227 | 925 |
| % App. Total | 14.6 | 74.5 | 10.9 | | 9.4 | 81.2 | 9.4 | | 18.9 | 70.1 | 11 | | 14.5 | 76.2 | 9.3 | | |
| PHF | .618 | .892 | .875 | .944 | .833 | .865 | .714 | .845 | .705 | .898 | .750 | .911 | .550 | .883 | .656 | .822 | .940 |

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107th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 5 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 0 | 0 | 1 | 6 |
| 04:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 3 | 3 | 6 | 3 | 0 | 0 | 3 | 15 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 5 |
| Grand Total | 0 | 5 | 0 | 5 | 0 | 2 | 1 | 3 | 0 | 5 | 3 | 8 | 3 | 1 | 0 | 4 | 20 |
| Apprch % | 0 | 100 | 0 | | 0 | 66.7 | 33.3 | | 0 | 62.5 | 37.5 | | 75 | 25 | 0 | | |
| Total % | 0 | 25 | 0 | 25 | 0 | 10 | 5 | 15 | 0 | 25 | 15 | 40 | 15 | 5 | 0 | 20 | |

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107th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 107th St From East | | | | Wentworth Ave From South | | | | 107th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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107th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/7/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 107th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 107th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 8 | 8 | 0 | 7 | 7 | 16 |
| 04:15 PM | 0 | 9 | 9 | 1 | 14 | 15 | 2 | 12 | 14 | 0 | 9 | 9 | 47 |
| 04:30 PM | 0 | 8 | 8 | 0 | 18 | 18 | 0 | 5 | 5 | 0 | 0 | 0 | 31 |
| 04:45 PM | 0 | 3 | 3 | 2 | 3 | 5 | 0 | 14 | 14 | 0 | 9 | 9 | 31 |
| Total | 0 | 20 | 20 | 3 | 36 | 39 | 2 | 39 | 41 | 0 | 25 | 25 | 125 |
| 05:00 PM | 0 | 10 | 10 | 0 | 8 | 8 | 1 | 13 | 14 | 0 | 5 | 5 | 37 |
| 05:15 PM | 0 | 5 | 5 | 0 | 0 | 0 | 1 | 6 | 7 | 1 | 3 | 4 | 16 |
| 05:30 PM | 0 | 2 | 2 | 4 | 8 | 12 | 1 | 9 | 10 | 0 | 3 | 3 | 27 |
| 05:45 PM | 0 | 1 | 1 | 0 | 3 | 3 | 3 | 6 | 9 | 0 | 5 | 5 | 18 |
| Total | 0 | 18 | 18 | 4 | 19 | 23 | 6 | 34 | 40 | 1 | 16 | 17 | 98 |
| Grand Total | 0 | 38 | 38 | 7 | 55 | 62 | 8 | 73 | 81 | 1 | 41 | 42 | 223 |
| Apprch % | 0 | 100 | | 11.3 | 88.7 | | 9.9 | 90.1 | | 2.4 | 97.6 | | |
| Total % | 0 | 17 | 17 | 3.1 | 24.7 | 27.8 | 3.6 | 32.7 | 36.3 | 0.4 | 18.4 | 18.8 | |

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111th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 11 | 61 | 14 | 86 | 23 | 24 | 5 | 52 | 8 | 198 | 6 | 212 | 6 | 27 | 24 | 57 | 407 |
| 07:15 AM | 3 | 88 | 10 | 101 | 10 | 28 | 8 | 46 | 5 | 224 | 7 | 236 | 14 | 32 | 29 | 75 | 458 |
| 07:30 AM | 8 | 108 | 19 | 135 | 19 | 29 | 10 | 58 | 17 | 271 | 7 | 295 | 6 | 47 | 45 | 98 | 586 |
| 07:45 AM | 15 | 113 | 18 | 146 | 25 | 33 | 14 | 72 | 10 | 253 | 13 | 276 | 14 | 45 | 35 | 94 | 588 |
| Total | 37 | 370 | 61 | 468 | 77 | 114 | 37 | 228 | 40 | 946 | 33 | 1019 | 40 | 151 | 133 | 324 | 2039 |
| 08:00 AM | 5 | 146 | 25 | 176 | 24 | 44 | 12 | 80 | 18 | 202 | 9 | 229 | 20 | 45 | 21 | 86 | 571 |
| 08:15 AM | 14 | 109 | 26 | 149 | 20 | 36 | 9 | 65 | 5 | 195 | 6 | 206 | 14 | 65 | 25 | 104 | 524 |
| 08:30 AM | 9 | 91 | 22 | 122 | 13 | 24 | 14 | 51 | 9 | 164 | 12 | 185 | 16 | 34 | 15 | 65 | 423 |
| 08:45 AM | 5 | 113 | 31 | 149 | 18 | 39 | 11 | 68 | 14 | 159 | 17 | 190 | 18 | 51 | 16 | 85 | 492 |
| Total | 33 | 459 | 104 | 596 | 75 | 143 | 46 | 264 | 46 | 720 | 44 | 810 | 68 | 195 | 77 | 340 | 2010 |
| Grand Total | 70 | 829 | 165 | 1064 | 152 | 257 | 83 | 492 | 86 | 1666 | 77 | 1829 | 108 | 346 | 210 | 664 | 4049 |
| Apprch % | 6.6 | 77.9 | 15.5 | | 30.9 | 52.2 | 16.9 | | 4.7 | 91.1 | 4.2 | | 16.3 | 52.1 | 31.6 | | |
| Total % | 1.7 | 20.5 | 4.1 | 26.3 | 3.8 | 6.3 | 2 | 12.2 | 2.1 | 41.1 | 1.9 | 45.2 | 2.7 | 8.5 | 5.2 | 16.4 | |
| PC | 65 | 764 | 156 | 985 | 147 | 236 | 77 | 460 | 85 | 1598 | 74 | 1757 | 104 | 325 | 194 | 623 | 3825 |
| % PC | 92.9 | 92.2 | 94.5 | 92.6 | 96.7 | 91.8 | 92.8 | 93.5 | 98.8 | 95.9 | 96.1 | 96.1 | 96.3 | 93.9 | 92.4 | 93.8 | 94.5 |
| SU | 5 | 63 | 9 | 77 | 5 | 21 | 6 | 32 | 1 | 64 | 3 | 68 | 4 | 20 | 15 | 39 | 216 |
| % SU | 7.1 | 7.6 | 5.5 | 7.2 | 3.3 | 8.2 | 7.2 | 6.5 | 1.2 | 3.8 | 3.9 | 3.7 | 3.7 | 5.8 | 7.1 | 5.9 | 5.3 |
| MU | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 1 | 1 | 2 | 8 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 0.3 | 0.5 | 0.3 | 0.2 |

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 8 | 108 | 19 | 135 | 19 | 29 | 10 | 58 | 17 | 271 | 7 | 295 | 6 | 47 | 45 | 98 | 586 |
| 07:45 AM | 15 | 113 | 18 | 146 | 25 | 33 | 14 | 72 | 10 | 253 | 13 | 276 | 14 | 45 | 35 | 94 | 588 |
| 08:00 AM | 5 | 146 | 25 | 176 | 24 | 44 | 12 | 80 | 18 | 202 | 9 | 229 | 20 | 45 | 21 | 86 | 571 |
| 08:15 AM | 14 | 109 | 26 | 149 | 20 | 36 | 9 | 65 | 5 | 195 | 6 | 206 | 14 | 65 | 25 | 104 | 524 |
| Total Volume | 42 | 476 | 88 | 606 | 88 | 142 | 45 | 275 | 50 | 921 | 35 | 1006 | 54 | 202 | 126 | 382 | 2269 |
| % App. Total | 6.9 | 78.5 | 14.5 | | 32 | 51.6 | 16.4 | | 5 | 91.6 | 3.5 | | 14.1 | 52.9 | 33 | | |
| PHF | .700 | .815 | .846 | .861 | .880 | .807 | .804 | .859 | .694 | .850 | .673 | .853 | .675 | .777 | .700 | .918 | .965 |

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111th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 2

Groups Printed- SU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 6 | 2 | 9 | 1 | 3 | 0 | 4 | 0 | 7 | 0 | 7 | 1 | 1 | 3 | 5 | 25 |
| 07:15 AM | 1 | 5 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 11 | 0 | 11 | 1 | 1 | 1 | 3 | 22 |
| 07:30 AM | 1 | 8 | 1 | 10 | 2 | 3 | 0 | 5 | 0 | 8 | 0 | 8 | 0 | 3 | 3 | 6 | 29 |
| 07:45 AM | 1 | 10 | 0 | 11 | 1 | 2 | 1 | 4 | 0 | 10 | 2 | 12 | 0 | 5 | 6 | 11 | 38 |
| Total | 4 | 29 | 3 | 36 | 4 | 10 | 1 | 15 | 0 | 36 | 2 | 38 | 2 | 10 | 13 | 25 | 114 |
| 08:00 AM | 0 | 10 | 1 | 11 | 0 | 1 | 3 | 4 | 0 | 10 | 0 | 10 | 0 | 2 | 1 | 3 | 28 |
| 08:15 AM | 0 | 11 | 1 | 12 | 1 | 4 | 0 | 5 | 0 | 4 | 0 | 4 | 2 | 3 | 1 | 6 | 27 |
| 08:30 AM | 1 | 8 | 0 | 9 | 0 | 2 | 2 | 4 | 1 | 9 | 0 | 10 | 0 | 0 | 0 | 0 | 23 |
| 08:45 AM | 0 | 5 | 4 | 9 | 0 | 4 | 0 | 4 | 0 | 5 | 1 | 6 | 0 | 5 | 0 | 5 | 24 |
| Total | 1 | 34 | 6 | 41 | 1 | 11 | 5 | 17 | 1 | 28 | 1 | 30 | 2 | 10 | 2 | 14 | 102 |
| Grand Total | 5 | 63 | 9 | 77 | 5 | 21 | 6 | 32 | 1 | 64 | 3 | 68 | 4 | 20 | 15 | 39 | 216 |
| Apprch % | 6.5 | 81.8 | 11.7 | | 15.6 | 65.6 | 18.8 | | 1.5 | 94.1 | 4.4 | | 10.3 | 51.3 | 38.5 | | |
| Total % | 2.3 | 29.2 | 4.2 | 35.6 | 2.3 | 9.7 | 2.8 | 14.8 | 0.5 | 29.6 | 1.4 | 31.5 | 1.9 | 9.3 | 6.9 | 18.1 | |

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111th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 3

Groups Printed- MU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 1 | 2 | 6 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 1 | 1 | 2 | 8 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 50 | 50 | | |
| Total % | 0 | 25 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 0 | 12.5 | 12.5 | 25 | |

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111th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/8/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 12 | 12 | 0 | 8 | 8 | 1 | 8 | 9 | 1 | 5 | 6 | 35 |
| 07:15 AM | 0 | 16 | 16 | 0 | 4 | 4 | 0 | 18 | 18 | 0 | 11 | 11 | 49 |
| 07:30 AM | 1 | 9 | 10 | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 12 | 12 | 31 |
| 07:45 AM | 1 | 19 | 20 | 0 | 2 | 2 | 0 | 9 | 9 | 0 | 8 | 8 | 39 |
| Total | 2 | 56 | 58 | 0 | 16 | 16 | 1 | 42 | 43 | 1 | 36 | 37 | 154 |
| 08:00 AM | 0 | 16 | 16 | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 2 | 2 | 24 |
| 08:15 AM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 4 | 11 |
| 08:30 AM | 0 | 20 | 20 | 1 | 8 | 9 | 0 | 7 | 7 | 1 | 4 | 5 | 41 |
| 08:45 AM | 2 | 9 | 11 | 0 | 2 | 2 | 0 | 3 | 3 | 1 | 7 | 8 | 24 |
| Total | 2 | 50 | 52 | 1 | 14 | 15 | 0 | 14 | 14 | 2 | 17 | 19 | 100 |
| Grand Total | 4 | 106 | 110 | 1 | 30 | 31 | 1 | 56 | 57 | 3 | 53 | 56 | 254 |
| Apprch % | 3.6 | 96.4 | | 3.2 | 96.8 | | 1.8 | 98.2 | | 5.4 | 94.6 | | |
| Total % | 1.6 | 41.7 | 43.3 | 0.4 | 11.8 | 12.2 | 0.4 | 22 | 22.4 | 1.2 | 20.9 | 22 | |

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111th St and Halsted Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/8/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 21 | 225 | 29 | 275 | 14 | 49 | 18 | 81 | 13 | 139 | 13 | 165 | 34 | 57 | 11 | 102 | 623 |
| 04:15 PM | 13 | 174 | 25 | 212 | 26 | 50 | 24 | 100 | 15 | 125 | 17 | 157 | 19 | 37 | 17 | 73 | 542 |
| 04:30 PM | 13 | 207 | 28 | 248 | 21 | 47 | 27 | 95 | 12 | 137 | 21 | 170 | 31 | 47 | 23 | 101 | 614 |
| 04:45 PM | 10 | 194 | 32 | 236 | 25 | 49 | 24 | 98 | 19 | 137 | 12 | 168 | 22 | 34 | 29 | 85 | 587 |
| Total | 57 | 800 | 114 | 971 | 86 | 195 | 93 | 374 | 59 | 538 | 63 | 660 | 106 | 175 | 80 | 361 | 2366 |
| 05:00 PM | 18 | 217 | 19 | 254 | 17 | 55 | 23 | 95 | 14 | 147 | 14 | 175 | 24 | 52 | 22 | 98 | 622 |
| 05:15 PM | 20 | 217 | 23 | 260 | 23 | 50 | 28 | 101 | 12 | 129 | 12 | 153 | 33 | 54 | 18 | 105 | 619 |
| 05:30 PM | 9 | 181 | 25 | 215 | 22 | 53 | 13 | 88 | 23 | 134 | 18 | 175 | 23 | 47 | 20 | 90 | 568 |
| 05:45 PM | 15 | 227 | 29 | 271 | 29 | 40 | 26 | 95 | 10 | 128 | 21 | 159 | 20 | 52 | 16 | 88 | 613 |
| Total | 62 | 842 | 96 | 1000 | 91 | 198 | 90 | 379 | 59 | 538 | 65 | 662 | 100 | 205 | 76 | 381 | 2422 |
| Grand Total | 119 | 1642 | 210 | 1971 | 177 | 393 | 183 | 753 | 118 | 1076 | 128 | 1322 | 206 | 380 | 156 | 742 | 4788 |
| Apprch % | 6 | 83.3 | 10.7 | | 23.5 | 52.2 | 24.3 | | 8.9 | 81.4 | 9.7 | | 27.8 | 51.2 | 21 | | |
| Total % | 2.5 | 34.3 | 4.4 | 41.2 | 3.7 | 8.2 | 3.8 | 15.7 | 2.5 | 22.5 | 2.7 | 27.6 | 4.3 | 7.9 | 3.3 | 15.5 | |
| PC | 116 | 1587 | 208 | 1911 | 173 | 377 | 180 | 730 | 117 | 1029 | 125 | 1271 | 203 | 361 | 155 | 719 | 4631 |
| % PC | 97.5 | 96.7 | 99 | 97 | 97.7 | 95.9 | 98.4 | 96.9 | 99.2 | 95.6 | 97.7 | 96.1 | 98.5 | 95 | 99.4 | 96.9 | 96.7 |
| SU | 3 | 52 | 2 | 57 | 4 | 14 | 2 | 20 | 0 | 42 | 2 | 44 | 3 | 19 | 0 | 22 | 143 |
| % SU | 2.5 | 3.2 | 1 | 2.9 | 2.3 | 3.6 | 1.1 | 2.7 | 0 | 3.9 | 1.6 | 3.3 | 1.5 | 5 | 0 | 3 | 3 |
| MU | 0 | 3 | 0 | 3 | 0 | 2 | 1 | 3 | 1 | 5 | 1 | 7 | 0 | 0 | 1 | 1 | 14 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0.5 | 0.5 | 0.4 | 0.8 | 0.5 | 0.8 | 0.5 | 0 | 0 | 0.6 | 0.1 | 0.3 |

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 8 | 108 | 19 | 135 | 19 | 29 | 10 | 58 | 17 | 271 | 7 | 295 | 6 | 47 | 45 | 98 | 586 |
| 07:45 AM | 15 | 113 | 18 | 146 | 25 | 33 | 14 | 72 | 10 | 253 | 13 | 276 | 14 | 45 | 35 | 94 | 588 |
| 08:00 AM | 5 | 146 | 25 | 176 | 24 | 44 | 12 | 80 | 18 | 202 | 9 | 229 | 20 | 45 | 21 | 86 | 571 |
| 08:15 AM | 14 | 109 | 26 | 149 | 20 | 36 | 9 | 65 | 5 | 195 | 6 | 206 | 14 | 65 | 25 | 104 | 524 |
| Total Volume | 42 | 476 | 88 | 606 | 88 | 142 | 45 | 275 | 50 | 921 | 35 | 1006 | 54 | 202 | 126 | 382 | 2269 |
| % App. Total | 6.9 | 78.5 | 14.5 | | 32 | 51.6 | 16.4 | | 5 | 91.6 | 3.5 | | 14.1 | 52.9 | 33 | | |
| PHF | .700 | .815 | .846 | .861 | .880 | .807 | .804 | .859 | .694 | .850 | .673 | .853 | .675 | .777 | .700 | .918 | .965 |

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111th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 6

Groups Printed- SU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 10 | 0 | 11 | 0 | 2 | 1 | 3 | 0 | 5 | 0 | 5 | 1 | 4 | 0 | 5 | 24 |
| 04:15 PM | 0 | 5 | 0 | 5 | 0 | 5 | 1 | 6 | 0 | 6 | 1 | 7 | 0 | 2 | 0 | 2 | 20 |
| 04:30 PM | 0 | 10 | 0 | 10 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 1 | 3 | 0 | 4 | 20 |
| 04:45 PM | 1 | 6 | 0 | 7 | 1 | 1 | 0 | 2 | 0 | 6 | 0 | 6 | 1 | 1 | 0 | 2 | 17 |
| Total | 2 | 31 | 0 | 33 | 1 | 9 | 2 | 12 | 0 | 22 | 1 | 23 | 3 | 10 | 0 | 13 | 81 |
| 05:00 PM | 0 | 7 | 0 | 7 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 3 | 0 | 3 | 16 |
| 05:15 PM | 1 | 6 | 0 | 7 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 0 | 3 | 0 | 3 | 17 |
| 05:30 PM | 0 | 3 | 2 | 5 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 8 |
| 05:45 PM | 0 | 5 | 0 | 5 | 3 | 2 | 0 | 5 | 0 | 8 | 0 | 8 | 0 | 3 | 0 | 3 | 21 |
| Total | 1 | 21 | 2 | 24 | 3 | 5 | 0 | 8 | 0 | 20 | 1 | 21 | 0 | 9 | 0 | 9 | 62 |
| Grand Total | 3 | 52 | 2 | 57 | 4 | 14 | 2 | 20 | 0 | 42 | 2 | 44 | 3 | 19 | 0 | 22 | 143 |
| Apprch % | 5.3 | 91.2 | 3.5 | | 20 | 70 | 10 | | 0 | 95.5 | 4.5 | | 13.6 | 86.4 | 0 | | |
| Total % | 2.1 | 36.4 | 1.4 | 39.9 | 2.8 | 9.8 | 1.4 | 14 | 0 | 29.4 | 1.4 | 30.8 | 2.1 | 13.3 | 0 | 15.4 | |

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111th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 7

Groups Printed- MU

| | Halsted Ave From North | | | | 111th St From East | | | | Halsted Ave From South | | | | 111th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 8 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 6 |
| Grand Total | 0 | 3 | 0 | 3 | 0 | 2 | 1 | 3 | 1 | 5 | 1 | 7 | 0 | 0 | 1 | 1 | 14 |
| Apprch % | 0 | 100 | 0 | | 0 | 66.7 | 33.3 | | 14.3 | 71.4 | 14.3 | | 0 | 0 | 100 | | |
| Total % | 0 | 21.4 | 0 | 21.4 | 0 | 14.3 | 7.1 | 21.4 | 7.1 | 35.7 | 7.1 | 50 | 0 | 0 | 7.1 | 7.1 | |

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111th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/8/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 18 | 18 | 0 | 6 | 6 | 0 | 9 | 9 | 0 | 13 | 13 | 46 |
| 04:15 PM | 0 | 5 | 5 | 0 | 8 | 8 | 1 | 11 | 12 | 1 | 6 | 7 | 32 |
| 04:30 PM | 0 | 20 | 20 | 0 | 3 | 3 | 2 | 19 | 21 | 2 | 9 | 11 | 55 |
| 04:45 PM | 3 | 17 | 20 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 4 | 4 | 29 |
| Total | 3 | 60 | 63 | 0 | 18 | 18 | 3 | 43 | 46 | 3 | 32 | 35 | 162 |
| 05:00 PM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 7 | 7 | 21 |
| 05:15 PM | 0 | 10 | 10 | 0 | 4 | 4 | 0 | 12 | 12 | 1 | 10 | 11 | 37 |
| 05:30 PM | 1 | 7 | 8 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 8 | 8 | 20 |
| 05:45 PM | 0 | 13 | 13 | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 9 | 9 | 31 |
| Total | 1 | 35 | 36 | 0 | 8 | 8 | 0 | 30 | 30 | 1 | 34 | 35 | 109 |
| Grand Total | 4 | 95 | 99 | 0 | 26 | 26 | 3 | 73 | 76 | 4 | 66 | 70 | 271 |
| Apprch % | 4 | 96 | | 0 | 100 | | 3.9 | 96.1 | | 5.7 | 94.3 | | |
| Total % | 1.5 | 35.1 | 36.5 | 0 | 9.6 | 9.6 | 1.1 | 26.9 | 28 | 1.5 | 24.4 | 25.8 | |

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111th St and Hamlet Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 16 | 27 | 0 | 43 | 37 | 139 | 36 | 212 | 0 | 27 | 48 | 75 | 330 |
| 07:15 AM | 0 | 0 | 0 | 0 | 18 | 62 | 0 | 80 | 36 | 131 | 45 | 212 | 0 | 24 | 40 | 64 | 356 |
| 07:30 AM | 0 | 0 | 0 | 0 | 21 | 60 | 0 | 81 | 59 | 123 | 37 | 219 | 0 | 42 | 46 | 88 | 388 |
| 07:45 AM | 0 | 0 | 0 | 0 | 12 | 51 | 0 | 63 | 71 | 143 | 58 | 272 | 0 | 46 | 43 | 89 | 424 |
| Total | 0 | 0 | 0 | 0 | 67 | 200 | 0 | 267 | 203 | 536 | 176 | 915 | 0 | 139 | 177 | 316 | 1498 |
| 08:00 AM | 0 | 0 | 0 | 0 | 14 | 94 | 0 | 108 | 88 | 122 | 43 | 253 | 0 | 43 | 26 | 69 | 430 |
| 08:15 AM | 0 | 0 | 0 | 0 | 7 | 65 | 0 | 72 | 71 | 121 | 34 | 226 | 0 | 54 | 23 | 77 | 375 |
| 08:30 AM | 0 | 0 | 0 | 0 | 10 | 56 | 0 | 66 | 61 | 123 | 24 | 208 | 0 | 66 | 27 | 93 | 367 |
| 08:45 AM | 0 | 0 | 0 | 0 | 23 | 71 | 0 | 94 | 55 | 123 | 14 | 192 | 0 | 61 | 21 | 82 | 368 |
| Total | 0 | 0 | 0 | 0 | 54 | 286 | 0 | 340 | 275 | 489 | 115 | 879 | 0 | 224 | 97 | 321 | 1540 |
| Grand Total | 0 | 0 | 0 | 0 | 121 | 486 | 0 | 607 | 478 | 1025 | 291 | 1794 | 0 | 363 | 274 | 637 | 3038 |
| Apprch % | 0 | 0 | 0 | | 19.9 | 80.1 | 0 | | 26.6 | 57.1 | 16.2 | | 0 | 57 | 43 | | |
| Total % | 0 | 0 | 0 | 0 | 4 | 16 | 0 | 20 | 15.7 | 33.7 | 9.6 | 59.1 | 0 | 11.9 | 9 | 21 | |
| PC | 0 | 0 | 0 | 0 | 110 | 457 | 0 | 567 | 465 | 1013 | 286 | 1764 | 0 | 320 | 266 | 586 | 2917 |
| % PC | 0 | 0 | 0 | 0 | 90.9 | 94 | 0 | 93.4 | 97.3 | 98.8 | 98.3 | 98.3 | 0 | 88.2 | 97.1 | 92 | 96 |
| SU | 0 | 0 | 0 | 0 | 11 | 28 | 0 | 39 | 11 | 9 | 4 | 24 | 0 | 42 | 8 | 50 | 113 |
| % SU | 0 | 0 | 0 | 0 | 9.1 | 5.8 | 0 | 6.4 | 2.3 | 0.9 | 1.4 | 1.3 | 0 | 11.6 | 2.9 | 7.8 | 3.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 1 | 6 | 0 | 1 | 0 | 1 | 8 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0 | 0.3 | 0 | 0.2 | 0.3 |

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 0 | 0 | 0 | 0 | 21 | 60 | 0 | 81 | 59 | 123 | 37 | 219 | 0 | 42 | 46 | 88 | 388 |
| 07:45 AM | 0 | 0 | 0 | 0 | 12 | 51 | 0 | 63 | 71 | 143 | 58 | 272 | 0 | 46 | 43 | 89 | 424 |
| 08:00 AM | 0 | 0 | 0 | 0 | 14 | 94 | 0 | 108 | 88 | 122 | 43 | 253 | 0 | 43 | 26 | 69 | 430 |
| 08:15 AM | 0 | 0 | 0 | 0 | 7 | 65 | 0 | 72 | 71 | 121 | 34 | 226 | 0 | 54 | 23 | 77 | 375 |
| Total Volume | 0 | 0 | 0 | 0 | 54 | 270 | 0 | 324 | 289 | 509 | 172 | 970 | 0 | 185 | 138 | 323 | 1617 |
| % App. Total | 0 | 0 | 0 | | 16.7 | 83.3 | 0 | | 29.8 | 52.5 | 17.7 | | 0 | 57.3 | 42.7 | | |
| PHF | .000 | .000 | .000 | .000 | .643 | .718 | .000 | .750 | .821 | .890 | .741 | .892 | .000 | .856 | .750 | .907 | .940 |

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111th St and Hamlet Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 2

Groups Printed- SU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7 |
| 07:15 AM | 0 | 0 | 0 | 0 | 3 | 7 | 0 | 10 | 1 | 1 | 2 | 4 | 0 | 4 | 2 | 6 | 20 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 | 2 | 0 | 5 | 0 | 6 | 1 | 7 | 15 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 0 | 5 | 9 |
| Total | 0 | 0 | 0 | 0 | 7 | 13 | 0 | 20 | 5 | 4 | 3 | 12 | 0 | 15 | 4 | 19 | 51 |
| 08:00 AM | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 7 | 3 | 0 | 0 | 3 | 0 | 4 | 1 | 5 | 15 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 6 | 1 | 7 | 12 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 1 | 3 | 0 | 4 | 0 | 10 | 2 | 12 | 21 |
| 08:45 AM | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 1 | 2 | 1 | 4 | 0 | 7 | 0 | 7 | 14 |
| Total | 0 | 0 | 0 | 0 | 4 | 15 | 0 | 19 | 6 | 5 | 1 | 12 | 0 | 27 | 4 | 31 | 62 |
| Grand Total | 0 | 0 | 0 | 0 | 11 | 28 | 0 | 39 | 11 | 9 | 4 | 24 | 0 | 42 | 8 | 50 | 113 |
| Apprch % | 0 | 0 | 0 | | 28.2 | 71.8 | 0 | | 45.8 | 37.5 | 16.7 | | 0 | 84 | 16 | | |
| Total % | 0 | 0 | 0 | 0 | 9.7 | 24.8 | 0 | 34.5 | 9.7 | 8 | 3.5 | 21.2 | 0 | 37.2 | 7.1 | 44.2 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 3

Groups Printed- MU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 1 | 5 | 0 | 0 | 0 | 0 | 6 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 1 | 6 | 0 | 1 | 0 | 1 | 8 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 33.3 | 50 | 16.7 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 12.5 | 0 | 12.5 | 25 | 37.5 | 12.5 | 75 | 0 | 12.5 | 0 | 12.5 | |

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111th St and Hamlet Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/5/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Hamlet Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Hamlet Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 07:15 AM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 9 |
| 07:30 AM | 1 | 4 | 5 | 1 | 0 | 1 | 0 | 4 | 4 | 0 | 0 | 0 | 10 |
| 07:45 AM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 1 | 17 | 18 | 1 | 0 | 1 | 0 | 7 | 7 | 0 | 0 | 0 | 26 |
| 08:00 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 0 | 0 | 6 |
| 08:15 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 12 |
| 08:30 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 | 14 |
| 08:45 AM | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 0 | 0 | 9 |
| Total | 0 | 11 | 11 | 0 | 4 | 4 | 0 | 26 | 26 | 0 | 0 | 0 | 41 |
| Grand Total | 1 | 28 | 29 | 1 | 4 | 5 | 0 | 33 | 33 | 0 | 0 | 0 | 67 |
| Apprch % | 3.4 | 96.6 | | 20 | 80 | | 0 | 100 | | 0 | 0 | | |
| Total % | 1.5 | 41.8 | 43.3 | 1.5 | 6 | 7.5 | 0 | 49.3 | 49.3 | 0 | 0 | 0 | |

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111th St and Hamlet Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 18 | 74 | 0 | 92 | 47 | 95 | 20 | 162 | 0 | 54 | 25 | 79 | 333 |
| 04:15 PM | 0 | 0 | 0 | 0 | 31 | 86 | 0 | 117 | 41 | 105 | 16 | 162 | 0 | 76 | 46 | 122 | 401 |
| 04:30 PM | 0 | 0 | 0 | 0 | 23 | 73 | 0 | 96 | 45 | 113 | 21 | 179 | 0 | 54 | 31 | 85 | 360 |
| 04:45 PM | 0 | 0 | 0 | 0 | 19 | 52 | 0 | 71 | 44 | 88 | 16 | 148 | 0 | 46 | 29 | 75 | 294 |
| Total | 0 | 0 | 0 | 0 | 91 | 285 | 0 | 376 | 177 | 401 | 73 | 651 | 0 | 230 | 131 | 361 | 1388 |
| 05:00 PM | 0 | 0 | 0 | 0 | 31 | 62 | 0 | 93 | 41 | 90 | 8 | 139 | 0 | 52 | 45 | 97 | 329 |
| 05:15 PM | 0 | 0 | 0 | 0 | 33 | 75 | 0 | 108 | 36 | 108 | 20 | 164 | 0 | 68 | 33 | 101 | 373 |
| 05:30 PM | 0 | 0 | 0 | 0 | 20 | 70 | 0 | 90 | 50 | 89 | 10 | 149 | 0 | 56 | 27 | 83 | 322 |
| 05:45 PM | 0 | 0 | 0 | 0 | 25 | 70 | 0 | 95 | 48 | 128 | 22 | 198 | 0 | 56 | 44 | 100 | 393 |
| Total | 0 | 0 | 0 | 0 | 109 | 277 | 0 | 386 | 175 | 415 | 60 | 650 | 0 | 232 | 149 | 381 | 1417 |
| Grand Total | 0 | 0 | 0 | 0 | 200 | 562 | 0 | 762 | 352 | 816 | 133 | 1301 | 0 | 462 | 280 | 742 | 2805 |
| Apprch % | 0 | 0 | 0 | | 26.2 | 73.8 | 0 | | 27.1 | 62.7 | 10.2 | | 0 | 62.3 | 37.7 | | |
| Total % | 0 | 0 | 0 | 0 | 7.1 | 20 | 0 | 27.2 | 12.5 | 29.1 | 4.7 | 46.4 | 0 | 16.5 | 10 | 26.5 | |
| PC | 0 | 0 | 0 | 0 | 197 | 550 | 0 | 747 | 351 | 807 | 133 | 1291 | 0 | 408 | 274 | 682 | 2720 |
| % PC | 0 | 0 | 0 | 0 | 98.5 | 97.9 | 0 | 98 | 99.7 | 98.9 | 100 | 99.2 | 0 | 88.3 | 97.9 | 91.9 | 97 |
| SU | 0 | 0 | 0 | 0 | 3 | 12 | 0 | 15 | 1 | 8 | 0 | 9 | 0 | 54 | 6 | 60 | 84 |
| % SU | 0 | 0 | 0 | 0 | 1.5 | 2.1 | 0 | 2 | 0.3 | 1 | 0 | 0.7 | 0 | 11.7 | 2.1 | 8.1 | 3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|-----------|------|------------|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 0 | 0 | 0 | 31 | 62 | 0 | 93 | 41 | 90 | 8 | 139 | 0 | 52 | 45 | 97 | 329 |
| 05:15 PM | 0 | 0 | 0 | 0 | 33 | 75 | 0 | 108 | 36 | 108 | 20 | 164 | 0 | 68 | 33 | 101 | 373 |
| 05:30 PM | 0 | 0 | 0 | 0 | 20 | 70 | 0 | 90 | 50 | 89 | 10 | 149 | 0 | 56 | 27 | 83 | 322 |
| 05:45 PM | 0 | 0 | 0 | 0 | 25 | 70 | 0 | 95 | 48 | 128 | 22 | 198 | 0 | 56 | 44 | 100 | 393 |
| Total Volume | 0 | 0 | 0 | 0 | 109 | 277 | 0 | 386 | 175 | 415 | 60 | 650 | 0 | 232 | 149 | 381 | 1417 |
| % App. Total | 0 | 0 | 0 | | 28.2 | 71.8 | 0 | | 26.9 | 63.8 | 9.2 | | 0 | 60.9 | 39.1 | | |
| PHF | .000 | .000 | .000 | .000 | .826 | .923 | .000 | .894 | .875 | .811 | .682 | .821 | .000 | .853 | .828 | .943 | .901 |

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111th St and Hamlet Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 6

Groups Printed- SU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 7 | 1 | 8 | 11 |
| 04:15 PM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 11 | 0 | 11 | 16 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 13 | 2 | 15 | 18 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 8 |
| Total | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 7 | 1 | 5 | 0 | 6 | 0 | 37 | 3 | 40 | 53 |
| 05:00 PM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 8 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 5 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 3 | 2 | 5 | 8 |
| Total | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 8 | 0 | 3 | 0 | 3 | 0 | 17 | 3 | 20 | 31 |
| Grand Total | 0 | 0 | 0 | 0 | 3 | 12 | 0 | 15 | 1 | 8 | 0 | 9 | 0 | 54 | 6 | 60 | 84 |
| Apprch % | 0 | 0 | 0 | | 20 | 80 | 0 | | 11.1 | 88.9 | 0 | | 0 | 90 | 10 | | |
| Total % | 0 | 0 | 0 | 0 | 3.6 | 14.3 | 0 | 17.9 | 1.2 | 9.5 | 0 | 10.7 | 0 | 64.3 | 7.1 | 71.4 | |

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111th St and Hamlet Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 7

Groups Printed- MU

| | Hamlet Ave From North | | | | 111th St From East | | | | Hamlet Ave From South | | | | 111th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | |

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111th St and Hamlet Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/5/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Hamlet Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Hamlet Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 7 | 0 | 0 | 0 | 7 |
| 04:15 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:30 PM | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 1 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| Total | 2 | 5 | 7 | 1 | 0 | 1 | 1 | 8 | 9 | 0 | 0 | 0 | 17 |
| 05:00 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 05:30 PM | 2 | 4 | 6 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 0 | 0 | 13 |
| 05:45 PM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 3 | 9 | 12 | 0 | 1 | 1 | 0 | 13 | 13 | 0 | 0 | 0 | 26 |
| Grand Total | 5 | 14 | 19 | 1 | 1 | 2 | 1 | 21 | 22 | 0 | 0 | 0 | 43 |
| Apprch % | 26.3 | 73.7 | | 50 | 50 | | 4.5 | 95.5 | | 0 | 0 | | |
| Total % | 11.6 | 32.6 | 44.2 | 2.3 | 2.3 | 4.7 | 2.3 | 48.8 | 51.2 | 0 | 0 | 0 | |

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111th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 60 | 58 | 7 | 125 | 0 | 38 | 10 | 48 | 0 | 0 | 0 | 0 | 11 | 75 | 0 | 86 | 259 |
| 07:15 AM | 92 | 76 | 11 | 179 | 0 | 73 | 20 | 93 | 0 | 0 | 0 | 0 | 15 | 63 | 0 | 78 | 350 |
| 07:30 AM | 117 | 82 | 13 | 212 | 0 | 61 | 21 | 82 | 0 | 0 | 0 | 0 | 15 | 60 | 0 | 75 | 369 |
| 07:45 AM | 108 | 80 | 18 | 206 | 0 | 86 | 21 | 107 | 0 | 0 | 0 | 0 | 16 | 60 | 0 | 76 | 389 |
| Total | 377 | 296 | 49 | 722 | 0 | 258 | 72 | 330 | 0 | 0 | 0 | 0 | 57 | 258 | 0 | 315 | 1367 |
| 08:00 AM | 64 | 61 | 18 | 143 | 0 | 78 | 20 | 98 | 0 | 0 | 0 | 0 | 25 | 43 | 0 | 68 | 309 |
| 08:15 AM | 72 | 82 | 17 | 171 | 0 | 67 | 32 | 99 | 0 | 0 | 0 | 0 | 20 | 53 | 0 | 73 | 343 |
| 08:30 AM | 47 | 62 | 23 | 132 | 0 | 76 | 30 | 106 | 0 | 0 | 0 | 0 | 17 | 44 | 0 | 61 | 299 |
| 08:45 AM | 67 | 68 | 32 | 167 | 0 | 64 | 28 | 92 | 0 | 0 | 0 | 0 | 10 | 51 | 0 | 61 | 320 |
| Total | 250 | 273 | 90 | 613 | 0 | 285 | 110 | 395 | 0 | 0 | 0 | 0 | 72 | 191 | 0 | 263 | 1271 |
| Grand Total | 627 | 569 | 139 | 1335 | 0 | 543 | 182 | 725 | 0 | 0 | 0 | 0 | 129 | 449 | 0 | 578 | 2638 |
| Apprch % | 47 | 42.6 | 10.4 | | 0 | 74.9 | 25.1 | | 0 | 0 | 0 | | 22.3 | 77.7 | 0 | | |
| Total % | 23.8 | 21.6 | 5.3 | 50.6 | 0 | 20.6 | 6.9 | 27.5 | 0 | 0 | 0 | 0 | 4.9 | 17 | 0 | 21.9 | |
| PC | 604 | 555 | 125 | 1284 | 0 | 512 | 174 | 686 | 0 | 0 | 0 | 0 | 125 | 418 | 0 | 543 | 2513 |
| % PC | 96.3 | 97.5 | 89.9 | 96.2 | 0 | 94.3 | 95.6 | 94.6 | 0 | 0 | 0 | 0 | 96.9 | 93.1 | 0 | 93.9 | 95.3 |
| SU | 19 | 12 | 14 | 45 | 0 | 29 | 8 | 37 | 0 | 0 | 0 | 0 | 4 | 30 | 0 | 34 | 116 |
| % SU | 3 | 2.1 | 10.1 | 3.4 | 0 | 5.3 | 4.4 | 5.1 | 0 | 0 | 0 | 0 | 3.1 | 6.7 | 0 | 5.9 | 4.4 |
| MU | 4 | 2 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 9 |
| % MU | 0.6 | 0.4 | 0 | 0.4 | 0 | 0.4 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0.3 |

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|--|------------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|------------------------------|------|------|------------|-----------------------|-----------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 92 | 76 | 11 | 179 | 0 | 73 | 20 | 93 | 0 | 0 | 0 | 0 | 15 | 63 | 0 | 78 | 350 |
| 07:30 AM | 117 | 82 | 13 | 212 | 0 | 61 | 21 | 82 | 0 | 0 | 0 | 0 | 15 | 60 | 0 | 75 | 369 |
| 07:45 AM | 108 | 80 | 18 | 206 | 0 | 86 | 21 | 107 | 0 | 0 | 0 | 0 | 16 | 60 | 0 | 76 | 389 |
| 08:00 AM | 64 | 61 | 18 | 143 | 0 | 78 | 20 | 98 | 0 | 0 | 0 | 0 | 25 | 43 | 0 | 68 | 309 |
| Total Volume | 381 | 299 | 60 | 740 | 0 | 298 | 82 | 380 | 0 | 0 | 0 | 0 | 71 | 226 | 0 | 297 | 1417 |
| % App. Total | 51.5 | 40.4 | 8.1 | | 0 | 78.4 | 21.6 | | 0 | 0 | 0 | | 23.9 | 76.1 | 0 | | |
| PHF | .814 | .912 | .833 | .873 | .000 | .866 | .976 | .888 | .000 | .000 | .000 | .000 | .710 | .897 | .000 | .952 | .911 |

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111th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 2

Groups Printed- SU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 7 |
| 07:15 AM | 2 | 0 | 1 | 3 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 11 |
| 07:30 AM | 2 | 2 | 1 | 5 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 17 |
| 07:45 AM | 5 | 2 | 0 | 7 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 18 |
| Total | 10 | 5 | 2 | 17 | 0 | 15 | 3 | 18 | 0 | 0 | 0 | 0 | 1 | 17 | 0 | 18 | 53 |
| 08:00 AM | 1 | 2 | 1 | 4 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 11 |
| 08:15 AM | 4 | 0 | 1 | 5 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 14 |
| 08:30 AM | 2 | 1 | 4 | 7 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 16 |
| 08:45 AM | 2 | 4 | 6 | 12 | 0 | 4 | 2 | 6 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 22 |
| Total | 9 | 7 | 12 | 28 | 0 | 14 | 5 | 19 | 0 | 0 | 0 | 0 | 3 | 13 | 0 | 16 | 63 |
| Grand Total | 19 | 12 | 14 | 45 | 0 | 29 | 8 | 37 | 0 | 0 | 0 | 0 | 4 | 30 | 0 | 34 | 116 |
| Apprch % | 42.2 | 26.7 | 31.1 | | 0 | 78.4 | 21.6 | | 0 | 0 | 0 | | 11.8 | 88.2 | 0 | | |
| Total % | 16.4 | 10.3 | 12.1 | 38.8 | 0 | 25 | 6.9 | 31.9 | 0 | 0 | 0 | 0 | 3.4 | 25.9 | 0 | 29.3 | |

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111th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 3

Groups Printed- MU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| Grand Total | 4 | 2 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 9 |
| Apprch % | 66.7 | 33.3 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 44.4 | 22.2 | 0 | 66.7 | 0 | 22.2 | 0 | 22.2 | 0 | 0 | 0 | 0 | 0 | 11.1 | 0 | 11.1 | |

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111th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/30/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 07:15 AM | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 14 |
| 07:30 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 6 |
| 07:45 AM | 0 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 8 |
| Total | 0 | 26 | 26 | 0 | 0 | 0 | 1 | 8 | 9 | 0 | 0 | 0 | 35 |
| 08:00 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 13 | 13 | 0 | 8 | 8 | 24 |
| 08:15 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 13 | 13 | 0 | 6 | 6 | 23 |
| 08:30 AM | 0 | 11 | 11 | 0 | 0 | 0 | 2 | 3 | 5 | 0 | 2 | 2 | 18 |
| 08:45 AM | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 6 |
| Total | 1 | 21 | 22 | 0 | 0 | 0 | 2 | 30 | 32 | 0 | 17 | 17 | 71 |
| Grand Total | 1 | 47 | 48 | 0 | 0 | 0 | 3 | 38 | 41 | 0 | 17 | 17 | 106 |
| Apprch % | 2.1 | 97.9 | | 0 | 0 | | 7.3 | 92.7 | | 0 | 100 | | |
| Total % | 0.9 | 44.3 | 45.3 | 0 | 0 | 0 | 2.8 | 35.8 | 38.7 | 0 | 16 | 16 | |

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111th St and Marshfield Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 135 | 135 | 41 | 311 | 0 | 44 | 28 | 72 | 0 | 0 | 0 | 0 | 32 | 52 | 0 | 84 | 467 |
| 04:15 PM | 91 | 101 | 30 | 222 | 0 | 60 | 46 | 106 | 0 | 0 | 0 | 0 | 34 | 66 | 0 | 100 | 428 |
| 04:30 PM | 102 | 107 | 34 | 243 | 0 | 66 | 44 | 110 | 0 | 0 | 0 | 0 | 37 | 54 | 0 | 91 | 444 |
| 04:45 PM | 85 | 127 | 36 | 248 | 0 | 45 | 23 | 68 | 0 | 0 | 0 | 0 | 28 | 66 | 0 | 94 | 410 |
| Total | 413 | 470 | 141 | 1024 | 0 | 215 | 141 | 356 | 0 | 0 | 0 | 0 | 131 | 238 | 0 | 369 | 1749 |
| 05:00 PM | 100 | 124 | 35 | 259 | 0 | 47 | 38 | 85 | 0 | 0 | 0 | 0 | 54 | 55 | 0 | 109 | 453 |
| 05:15 PM | 93 | 137 | 25 | 255 | 0 | 50 | 34 | 84 | 0 | 0 | 0 | 0 | 36 | 69 | 0 | 105 | 444 |
| 05:30 PM | 78 | 99 | 22 | 199 | 0 | 60 | 42 | 102 | 0 | 0 | 0 | 0 | 35 | 65 | 0 | 100 | 401 |
| 05:45 PM | 106 | 110 | 21 | 237 | 0 | 38 | 44 | 82 | 0 | 0 | 0 | 0 | 38 | 46 | 0 | 84 | 403 |
| Total | 377 | 470 | 103 | 950 | 0 | 195 | 158 | 353 | 0 | 0 | 0 | 0 | 163 | 235 | 0 | 398 | 1701 |
| Grand Total | 790 | 940 | 244 | 1974 | 0 | 410 | 299 | 709 | 0 | 0 | 0 | 0 | 294 | 473 | 0 | 767 | 3450 |
| Apprch % | 40 | 47.6 | 12.4 | | 0 | 57.8 | 42.2 | | 0 | 0 | 0 | | 38.3 | 61.7 | 0 | | |
| Total % | 22.9 | 27.2 | 7.1 | 57.2 | 0 | 11.9 | 8.7 | 20.6 | 0 | 0 | 0 | 0 | 8.5 | 13.7 | 0 | 22.2 | |
| PC | 779 | 928 | 200 | 1907 | 0 | 395 | 292 | 687 | 0 | 0 | 0 | 0 | 292 | 451 | 0 | 743 | 3337 |
| % PC | 98.6 | 98.7 | 82 | 96.6 | 0 | 96.3 | 97.7 | 96.9 | 0 | 0 | 0 | 0 | 99.3 | 95.3 | 0 | 96.9 | 96.7 |
| SU | 10 | 12 | 44 | 66 | 0 | 14 | 7 | 21 | 0 | 0 | 0 | 0 | 2 | 22 | 0 | 24 | 111 |
| % SU | 1.3 | 1.3 | 18 | 3.3 | 0 | 3.4 | 2.3 | 3 | 0 | 0 | 0 | 0 | 0.7 | 4.7 | 0 | 3.1 | 3.2 |
| MU | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| % MU | 0.1 | 0 | 0 | 0.1 | 0 | 0.2 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|--|------------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------------------------|------|------|------------|-----------------------|-----------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 102 | 107 | 34 | 243 | 0 | 66 | 44 | 110 | 0 | 0 | 0 | 0 | 37 | 54 | 0 | 91 | 444 |
| 04:45 PM | 85 | 127 | 36 | 248 | 0 | 45 | 23 | 68 | 0 | 0 | 0 | 0 | 28 | 66 | 0 | 94 | 410 |
| 05:00 PM | 100 | 124 | 35 | 259 | 0 | 47 | 38 | 85 | 0 | 0 | 0 | 0 | 54 | 55 | 0 | 109 | 453 |
| 05:15 PM | 93 | 137 | 25 | 255 | 0 | 50 | 34 | 84 | 0 | 0 | 0 | 0 | 36 | 69 | 0 | 105 | 444 |
| Total Volume | 380 | 495 | 130 | 1005 | 0 | 208 | 139 | 347 | 0 | 0 | 0 | 0 | 155 | 244 | 0 | 399 | 1751 |
| % App. Total | 37.8 | 49.3 | 12.9 | | 0 | 59.9 | 40.1 | | 0 | 0 | 0 | | 38.8 | 61.2 | 0 | | |
| PHF | .931 | .903 | .903 | .970 | .000 | .788 | .790 | .789 | .000 | .000 | .000 | .000 | .718 | .884 | .000 | .915 | .966 |

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111th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 6

Groups Printed- SU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 6 | 2 | 7 | 15 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 21 |
| 04:15 PM | 2 | 0 | 10 | 12 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 21 |
| 04:30 PM | 0 | 2 | 8 | 10 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 17 |
| 04:45 PM | 0 | 0 | 9 | 9 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 13 |
| Total | 8 | 4 | 34 | 46 | 0 | 8 | 5 | 13 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 13 | 72 |
| 05:00 PM | 0 | 0 | 4 | 4 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 6 | 13 |
| 05:15 PM | 1 | 4 | 4 | 9 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 14 |
| 05:30 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| 05:45 PM | 1 | 2 | 2 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 7 |
| Total | 2 | 8 | 10 | 20 | 0 | 6 | 2 | 8 | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 11 | 39 |
| Grand Total | 10 | 12 | 44 | 66 | 0 | 14 | 7 | 21 | 0 | 0 | 0 | 0 | 2 | 22 | 0 | 24 | 111 |
| Apprch % | 15.2 | 18.2 | 66.7 | | 0 | 66.7 | 33.3 | | 0 | 0 | 0 | | 8.3 | 91.7 | 0 | | |
| Total % | 9 | 10.8 | 39.6 | 59.5 | 0 | 12.6 | 6.3 | 18.9 | 0 | 0 | 0 | 0 | 1.8 | 19.8 | 0 | 21.6 | |

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111th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 7

Groups Printed- MU

| | Marshfield Ave From North | | | | 111th St From East | | | | Marshfield Ave From South | | | | 111th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Apprch % | 100 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 50 | 0 | 0 | 50 | 0 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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111th St and Marshfield Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/30/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 3 |
| 04:15 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 6 |
| 04:30 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 7 |
| 04:45 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| Total | 0 | 9 | 9 | 0 | 0 | 0 | 1 | 8 | 9 | 0 | 1 | 1 | 19 |
| 05:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 5 |
| 05:15 PM | 0 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 18 | 18 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 22 |
| Grand Total | 0 | 27 | 27 | 0 | 0 | 0 | 1 | 11 | 12 | 0 | 2 | 2 | 41 |
| Apprch % | 0 | 100 | | 0 | 0 | | 8.3 | 91.7 | | 0 | 100 | | |
| Total % | 0 | 65.9 | 65.9 | 0 | 0 | 0 | 2.4 | 26.8 | 29.3 | 0 | 4.9 | 4.9 | |

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111th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 11 | 7 | 24 | 9 | 36 | 0 | 45 | 5 | 24 | 2 | 31 | 3 | 24 | 8 | 35 | 135 |
| 07:15 AM | 9 | 14 | 4 | 27 | 20 | 56 | 1 | 77 | 4 | 12 | 4 | 20 | 3 | 58 | 7 | 68 | 192 |
| 07:30 AM | 18 | 19 | 9 | 46 | 15 | 73 | 2 | 90 | 14 | 28 | 4 | 46 | 1 | 61 | 14 | 76 | 258 |
| 07:45 AM | 24 | 9 | 11 | 44 | 17 | 132 | 4 | 153 | 11 | 27 | 12 | 50 | 4 | 65 | 15 | 84 | 331 |
| Total | 57 | 53 | 31 | 141 | 61 | 297 | 7 | 365 | 34 | 91 | 22 | 147 | 11 | 208 | 44 | 263 | 916 |
| 08:00 AM | 21 | 25 | 5 | 51 | 19 | 118 | 7 | 144 | 10 | 25 | 4 | 39 | 5 | 85 | 20 | 110 | 344 |
| 08:15 AM | 9 | 20 | 10 | 39 | 12 | 94 | 2 | 108 | 6 | 22 | 8 | 36 | 5 | 80 | 7 | 92 | 275 |
| 08:30 AM | 11 | 18 | 5 | 34 | 15 | 85 | 5 | 105 | 14 | 30 | 8 | 52 | 4 | 59 | 15 | 78 | 269 |
| 08:45 AM | 6 | 20 | 13 | 39 | 12 | 87 | 3 | 102 | 11 | 32 | 4 | 47 | 7 | 54 | 19 | 80 | 268 |
| Total | 47 | 83 | 33 | 163 | 58 | 384 | 17 | 459 | 41 | 109 | 24 | 174 | 21 | 278 | 61 | 360 | 1156 |
| Grand Total | 104 | 136 | 64 | 304 | 119 | 681 | 24 | 824 | 75 | 200 | 46 | 321 | 32 | 486 | 105 | 623 | 2072 |
| Apprch % | 34.2 | 44.7 | 21.1 | | 14.4 | 82.6 | 2.9 | | 23.4 | 62.3 | 14.3 | | 5.1 | 78 | 16.9 | | |
| Total % | 5 | 6.6 | 3.1 | 14.7 | 5.7 | 32.9 | 1.2 | 39.8 | 3.6 | 9.7 | 2.2 | 15.5 | 1.5 | 23.5 | 5.1 | 30.1 | |
| PC | 92 | 133 | 63 | 288 | 117 | 652 | 24 | 793 | 62 | 194 | 46 | 302 | 32 | 458 | 95 | 585 | 1968 |
| % PC | 88.5 | 97.8 | 98.4 | 94.7 | 98.3 | 95.7 | 100 | 96.2 | 82.7 | 97 | 100 | 94.1 | 100 | 94.2 | 90.5 | 93.9 | 95 |
| SU | 12 | 3 | 1 | 16 | 2 | 29 | 0 | 31 | 13 | 6 | 0 | 19 | 0 | 25 | 10 | 35 | 101 |
| % SU | 11.5 | 2.2 | 1.6 | 5.3 | 1.7 | 4.3 | 0 | 3.8 | 17.3 | 3 | 0 | 5.9 | 0 | 5.1 | 9.5 | 5.6 | 4.9 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0.5 | 0.1 |

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 24 | 9 | 11 | 44 | 17 | 132 | 4 | 153 | 11 | 27 | 12 | 50 | 4 | 65 | 15 | 84 | 331 |
| 08:00 AM | 21 | 25 | 5 | 51 | 19 | 118 | 7 | 144 | 10 | 25 | 4 | 39 | 5 | 85 | 20 | 110 | 344 |
| 08:15 AM | 9 | 20 | 10 | 39 | 12 | 94 | 2 | 108 | 6 | 22 | 8 | 36 | 5 | 80 | 7 | 92 | 275 |
| 08:30 AM | 11 | 18 | 5 | 34 | 15 | 85 | 5 | 105 | 14 | 30 | 8 | 52 | 4 | 59 | 15 | 78 | 269 |
| Total Volume | 65 | 72 | 31 | 168 | 63 | 429 | 18 | 510 | 41 | 104 | 32 | 177 | 18 | 289 | 57 | 364 | 1219 |
| % App. Total | 38.7 | 42.9 | 18.5 | | 12.4 | 84.1 | 3.5 | | 23.2 | 58.8 | 18.1 | | 4.9 | 79.4 | 15.7 | | |
| PHF | .677 | .720 | .705 | .824 | .829 | .813 | .643 | .833 | .732 | .867 | .667 | .851 | .900 | .850 | .713 | .827 | .886 |

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111th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 0 | 1 | 3 | 1 | 1 | 0 | 2 | 2 | 1 | 0 | 3 | 0 | 1 | 2 | 3 | 11 |
| 07:15 AM | 2 | 1 | 0 | 3 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 7 | 15 |
| 07:30 AM | 1 | 1 | 0 | 2 | 1 | 5 | 0 | 6 | 4 | 1 | 0 | 5 | 0 | 3 | 1 | 4 | 17 |
| 07:45 AM | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 3 | 1 | 4 | 11 |
| Total | 6 | 3 | 1 | 10 | 2 | 13 | 0 | 15 | 8 | 3 | 0 | 11 | 0 | 13 | 5 | 18 | 54 |
| 08:00 AM | 3 | 0 | 0 | 3 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 3 | 1 | 4 | 13 |
| 08:15 AM | 1 | 0 | 0 | 1 | 0 | 5 | 0 | 5 | 2 | 2 | 0 | 4 | 0 | 3 | 1 | 4 | 14 |
| 08:30 AM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 1 | 0 | 2 | 0 | 3 | 2 | 5 | 11 |
| 08:45 AM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 1 | 4 | 9 |
| Total | 6 | 0 | 0 | 6 | 0 | 16 | 0 | 16 | 5 | 3 | 0 | 8 | 0 | 12 | 5 | 17 | 47 |
| Grand Total | 12 | 3 | 1 | 16 | 2 | 29 | 0 | 31 | 13 | 6 | 0 | 19 | 0 | 25 | 10 | 35 | 101 |
| Apprch % | 75 | 18.8 | 6.2 | | 6.5 | 93.5 | 0 | | 68.4 | 31.6 | 0 | | 0 | 71.4 | 28.6 | | |
| Total % | 11.9 | 3 | 1 | 15.8 | 2 | 28.7 | 0 | 30.7 | 12.9 | 5.9 | 0 | 18.8 | 0 | 24.8 | 9.9 | 34.7 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/12/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 111th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 111th St Crossing West Leg | | | Int. Total |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 4 | 4 | 0 | 1 | 1 | 1 | 6 | 7 | 2 | 2 | 4 | 16 |
| 07:15 AM | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 1 | 1 | 12 |
| 07:30 AM | 0 | 6 | 6 | 0 | 1 | 1 | 0 | 16 | 16 | 0 | 7 | 7 | 30 |
| 07:45 AM | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 8 | 8 | 21 |
| Total | 0 | 20 | 20 | 0 | 4 | 4 | 1 | 34 | 35 | 2 | 18 | 20 | 79 |
| 08:00 AM | 0 | 6 | 6 | 0 | 1 | 1 | 0 | 9 | 9 | 0 | 0 | 0 | 16 |
| 08:15 AM | 0 | 4 | 4 | 0 | 1 | 1 | 2 | 8 | 10 | 1 | 3 | 4 | 19 |
| 08:30 AM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 0 | 0 | 13 |
| 08:45 AM | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 9 | 9 | 0 | 2 | 2 | 18 |
| Total | 0 | 17 | 17 | 0 | 9 | 9 | 2 | 32 | 34 | 1 | 5 | 6 | 66 |
| Grand Total | 0 | 37 | 37 | 0 | 13 | 13 | 3 | 66 | 69 | 3 | 23 | 26 | 145 |
| Apprch % | 0 | 100 | | 0 | 100 | | 4.3 | 95.7 | | 11.5 | 88.5 | | |
| Total % | 0 | 25.5 | 25.5 | 0 | 9 | 9 | 2.1 | 45.5 | 47.6 | 2.1 | 15.9 | 17.9 | |

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111th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 20 | 28 | 13 | 61 | 9 | 76 | 5 | 90 | 14 | 27 | 2 | 43 | 1 | 71 | 14 | 86 | 280 |
| 04:15 PM | 21 | 34 | 12 | 67 | 6 | 70 | 3 | 79 | 11 | 21 | 4 | 36 | 1 | 73 | 14 | 88 | 270 |
| 04:30 PM | 9 | 41 | 17 | 67 | 15 | 59 | 5 | 79 | 8 | 18 | 4 | 30 | 3 | 80 | 13 | 96 | 272 |
| 04:45 PM | 14 | 34 | 19 | 67 | 10 | 67 | 6 | 83 | 15 | 27 | 6 | 48 | 3 | 76 | 14 | 93 | 291 |
| Total | 64 | 137 | 61 | 262 | 40 | 272 | 19 | 331 | 48 | 93 | 16 | 157 | 8 | 300 | 55 | 363 | 1113 |
| 05:00 PM | 17 | 31 | 18 | 66 | 12 | 70 | 5 | 87 | 9 | 19 | 6 | 34 | 7 | 61 | 7 | 75 | 262 |
| 05:15 PM | 17 | 28 | 12 | 57 | 12 | 73 | 4 | 89 | 9 | 44 | 7 | 60 | 4 | 63 | 17 | 84 | 290 |
| 05:30 PM | 19 | 53 | 13 | 85 | 15 | 66 | 9 | 90 | 10 | 26 | 4 | 40 | 2 | 62 | 9 | 73 | 288 |
| 05:45 PM | 7 | 30 | 18 | 55 | 11 | 53 | 4 | 68 | 14 | 30 | 5 | 49 | 5 | 67 | 12 | 84 | 256 |
| Total | 60 | 142 | 61 | 263 | 50 | 262 | 22 | 334 | 42 | 119 | 22 | 183 | 18 | 253 | 45 | 316 | 1096 |
| Grand Total | 124 | 279 | 122 | 525 | 90 | 534 | 41 | 665 | 90 | 212 | 38 | 340 | 26 | 553 | 100 | 679 | 2209 |
| Apprch % | 23.6 | 53.1 | 23.2 | | 13.5 | 80.3 | 6.2 | | 26.5 | 62.4 | 11.2 | | 3.8 | 81.4 | 14.7 | | |
| Total % | 5.6 | 12.6 | 5.5 | 23.8 | 4.1 | 24.2 | 1.9 | 30.1 | 4.1 | 9.6 | 1.7 | 15.4 | 1.2 | 25 | 4.5 | 30.7 | |
| PC | 113 | 279 | 122 | 514 | 89 | 517 | 41 | 647 | 82 | 211 | 38 | 331 | 26 | 533 | 92 | 651 | 2143 |
| % PC | 91.1 | 100 | 100 | 97.9 | 98.9 | 96.8 | 100 | 97.3 | 91.1 | 99.5 | 100 | 97.4 | 100 | 96.4 | 92 | 95.9 | 97 |
| SU | 11 | 0 | 0 | 11 | 1 | 17 | 0 | 18 | 8 | 1 | 0 | 9 | 0 | 20 | 8 | 28 | 66 |
| % SU | 8.9 | 0 | 0 | 2.1 | 1.1 | 3.2 | 0 | 2.7 | 8.9 | 0.5 | 0 | 2.6 | 0 | 3.6 | 8 | 4.1 | 3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|--|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 14 | 34 | 19 | 67 | 10 | 67 | 6 | 83 | 15 | 27 | 6 | 48 | 3 | 76 | 14 | 93 | 291 |
| 05:00 PM | 17 | 31 | 18 | 66 | 12 | 70 | 5 | 87 | 9 | 19 | 6 | 34 | 7 | 61 | 7 | 75 | 262 |
| 05:15 PM | 17 | 28 | 12 | 57 | 12 | 73 | 4 | 89 | 9 | 44 | 7 | 60 | 4 | 63 | 17 | 84 | 290 |
| 05:30 PM | 19 | 53 | 13 | 85 | 15 | 66 | 9 | 90 | 10 | 26 | 4 | 40 | 2 | 62 | 9 | 73 | 288 |
| Total Volume | 67 | 146 | 62 | 275 | 49 | 276 | 24 | 349 | 43 | 116 | 23 | 182 | 16 | 262 | 47 | 325 | 1131 |
| % App. Total | 24.4 | 53.1 | 22.5 | | 14 | 79.1 | 6.9 | | 23.6 | 63.7 | 12.6 | | 4.9 | 80.6 | 14.5 | | |
| PHF | .882 | .689 | .816 | .809 | .817 | .945 | .667 | .969 | .717 | .659 | .821 | .758 | .571 | .862 | .691 | .874 | .972 |

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111th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 7 |
| 04:15 PM | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 5 | 1 | 6 | 13 |
| 04:30 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 5 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 3 | 1 | 4 | 10 |
| Total | 6 | 0 | 0 | 6 | 1 | 9 | 0 | 10 | 4 | 0 | 0 | 4 | 0 | 11 | 4 | 15 | 35 |
| 05:00 PM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 3 | 1 | 4 | 9 |
| 05:15 PM | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 2 | 7 |
| 05:30 PM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 10 |
| 05:45 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| Total | 5 | 0 | 0 | 5 | 0 | 8 | 0 | 8 | 4 | 1 | 0 | 5 | 0 | 9 | 4 | 13 | 31 |
| Grand Total | 11 | 0 | 0 | 11 | 1 | 17 | 0 | 18 | 8 | 1 | 0 | 9 | 0 | 20 | 8 | 28 | 66 |
| Apprch % | 100 | 0 | 0 | | 5.6 | 94.4 | 0 | | 88.9 | 11.1 | 0 | | 0 | 71.4 | 28.6 | | |
| Total % | 16.7 | 0 | 0 | 16.7 | 1.5 | 25.8 | 0 | 27.3 | 12.1 | 1.5 | 0 | 13.6 | 0 | 30.3 | 12.1 | 42.4 | |

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111th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 111th St From East | | | | Martin Luther King Dr From South | | | | 111th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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11th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/12/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 111th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 111th St Crossing West Leg | | | Int. Total |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 6 | 6 | 0 | 2 | 2 | 0 | 16 | 16 | 0 | 5 | 5 | 29 |
| 04:15 PM | 0 | 14 | 14 | 0 | 6 | 6 | 0 | 20 | 20 | 0 | 6 | 6 | 46 |
| 04:30 PM | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 15 | 15 | 0 | 0 | 0 | 21 |
| 04:45 PM | 0 | 7 | 7 | 0 | 3 | 3 | 2 | 25 | 27 | 0 | 2 | 2 | 39 |
| Total | 0 | 30 | 30 | 0 | 14 | 14 | 2 | 76 | 78 | 0 | 13 | 13 | 135 |
| 05:00 PM | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 3 | 3 | 0 | 2 | 2 | 19 |
| 05:15 PM | 0 | 6 | 6 | 0 | 25 | 25 | 0 | 15 | 15 | 0 | 1 | 1 | 47 |
| 05:30 PM | 0 | 1 | 1 | 0 | 2 | 2 | 3 | 16 | 19 | 1 | 6 | 7 | 29 |
| 05:45 PM | 0 | 10 | 10 | 0 | 2 | 2 | 1 | 13 | 14 | 0 | 0 | 0 | 26 |
| Total | 0 | 24 | 24 | 0 | 36 | 36 | 4 | 47 | 51 | 1 | 9 | 10 | 121 |
| Grand Total | 0 | 54 | 54 | 0 | 50 | 50 | 6 | 123 | 129 | 1 | 22 | 23 | 256 |
| Apprch % | 0 | 100 | | 0 | 100 | | 4.7 | 95.3 | | 4.3 | 95.7 | | |
| Total % | 0 | 21.1 | 21.1 | 0 | 19.5 | 19.5 | 2.3 | 48 | 50.4 | 0.4 | 8.6 | 9 | |

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111th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/10/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 10 | 20 | 5 | 35 | 8 | 32 | 5 | 45 | 3 | 57 | 1 | 61 | 4 | 37 | 9 | 50 | 191 |
| 07:15 AM | 7 | 23 | 5 | 35 | 22 | 46 | 8 | 76 | 7 | 65 | 2 | 74 | 5 | 56 | 11 | 72 | 257 |
| 07:30 AM | 9 | 24 | 12 | 45 | 15 | 50 | 11 | 76 | 14 | 60 | 3 | 77 | 6 | 67 | 18 | 91 | 289 |
| 07:45 AM | 10 | 29 | 10 | 49 | 30 | 85 | 8 | 123 | 11 | 81 | 2 | 94 | 3 | 78 | 17 | 98 | 364 |
| Total | 36 | 96 | 32 | 164 | 75 | 213 | 32 | 320 | 35 | 263 | 8 | 306 | 18 | 238 | 55 | 311 | 1101 |
| 08:00 AM | 8 | 33 | 12 | 53 | 22 | 92 | 11 | 125 | 14 | 82 | 5 | 101 | 4 | 80 | 14 | 98 | 377 |
| 08:15 AM | 11 | 32 | 7 | 50 | 15 | 86 | 7 | 108 | 5 | 79 | 1 | 85 | 7 | 68 | 15 | 90 | 333 |
| 08:30 AM | 12 | 30 | 7 | 49 | 12 | 55 | 3 | 70 | 3 | 56 | 6 | 65 | 11 | 89 | 11 | 111 | 295 |
| 08:45 AM | 8 | 41 | 13 | 62 | 20 | 81 | 12 | 113 | 8 | 49 | 6 | 63 | 12 | 58 | 14 | 84 | 322 |
| Total | 39 | 136 | 39 | 214 | 69 | 314 | 33 | 416 | 30 | 266 | 18 | 314 | 34 | 295 | 54 | 383 | 1327 |
| Grand Total | 75 | 232 | 71 | 378 | 144 | 527 | 65 | 736 | 65 | 529 | 26 | 620 | 52 | 533 | 109 | 694 | 2428 |
| Apprch % | 19.8 | 61.4 | 18.8 | | 19.6 | 71.6 | 8.8 | | 10.5 | 85.3 | 4.2 | | 7.5 | 76.8 | 15.7 | | |
| Total % | 3.1 | 9.6 | 2.9 | 15.6 | 5.9 | 21.7 | 2.7 | 30.3 | 2.7 | 21.8 | 1.1 | 25.5 | 2.1 | 22 | 4.5 | 28.6 | |
| PC | 71 | 202 | 68 | 341 | 141 | 497 | 55 | 693 | 49 | 481 | 25 | 555 | 51 | 503 | 104 | 658 | 2247 |
| % PC | 94.7 | 87.1 | 95.8 | 90.2 | 97.9 | 94.3 | 84.6 | 94.2 | 75.4 | 90.9 | 96.2 | 89.5 | 98.1 | 94.4 | 95.4 | 94.8 | 92.5 |
| SU | 4 | 30 | 3 | 37 | 3 | 29 | 10 | 42 | 16 | 47 | 1 | 64 | 1 | 30 | 3 | 34 | 177 |
| % SU | 5.3 | 12.9 | 4.2 | 9.8 | 2.1 | 5.5 | 15.4 | 5.7 | 24.6 | 8.9 | 3.8 | 10.3 | 1.9 | 5.6 | 2.8 | 4.9 | 7.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 4 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 1.8 | 0.3 | 0.2 |

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 10 | 29 | 10 | 49 | 30 | 85 | 8 | 123 | 11 | 81 | 2 | 94 | 3 | 78 | 17 | 98 | 364 |
| 08:00 AM | 8 | 33 | 12 | 53 | 22 | 92 | 11 | 125 | 14 | 82 | 5 | 101 | 4 | 80 | 14 | 98 | 377 |
| 08:15 AM | 11 | 32 | 7 | 50 | 15 | 86 | 7 | 108 | 5 | 79 | 1 | 85 | 7 | 68 | 15 | 90 | 333 |
| 08:30 AM | 12 | 30 | 7 | 49 | 12 | 55 | 3 | 70 | 3 | 56 | 6 | 65 | 11 | 89 | 11 | 111 | 295 |
| Total Volume | 41 | 124 | 36 | 201 | 79 | 318 | 29 | 426 | 33 | 298 | 14 | 345 | 25 | 315 | 57 | 397 | 1369 |
| % App. Total | 20.4 | 61.7 | 17.9 | | 18.5 | 74.6 | 6.8 | | 9.6 | 86.4 | 4.1 | | 6.3 | 79.3 | 14.4 | | |
| PHF | .854 | .939 | .750 | .948 | .658 | .864 | .659 | .852 | .589 | .909 | .583 | .854 | .568 | .885 | .838 | .894 | .908 |

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111th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 4 | 0 | 4 | 2 | 2 | 1 | 5 | 1 | 5 | 0 | 6 | 0 | 4 | 0 | 4 | 19 |
| 07:15 AM | 0 | 2 | 1 | 3 | 0 | 2 | 1 | 3 | 1 | 8 | 0 | 9 | 0 | 4 | 0 | 4 | 19 |
| 07:30 AM | 0 | 5 | 1 | 6 | 0 | 5 | 1 | 6 | 5 | 4 | 0 | 9 | 0 | 2 | 1 | 3 | 24 |
| 07:45 AM | 0 | 5 | 0 | 5 | 0 | 7 | 1 | 8 | 1 | 9 | 0 | 10 | 0 | 2 | 0 | 2 | 25 |
| Total | 0 | 16 | 2 | 18 | 2 | 16 | 4 | 22 | 8 | 26 | 0 | 34 | 0 | 12 | 1 | 13 | 87 |
| 08:00 AM | 2 | 4 | 0 | 6 | 0 | 4 | 2 | 6 | 2 | 7 | 0 | 9 | 0 | 8 | 0 | 8 | 29 |
| 08:15 AM | 0 | 4 | 1 | 5 | 1 | 3 | 1 | 5 | 1 | 6 | 0 | 7 | 0 | 3 | 2 | 5 | 22 |
| 08:30 AM | 2 | 3 | 0 | 5 | 0 | 5 | 1 | 6 | 2 | 5 | 1 | 8 | 1 | 5 | 0 | 6 | 25 |
| 08:45 AM | 0 | 3 | 0 | 3 | 0 | 1 | 2 | 3 | 3 | 3 | 0 | 6 | 0 | 2 | 0 | 2 | 14 |
| Total | 4 | 14 | 1 | 19 | 1 | 13 | 6 | 20 | 8 | 21 | 1 | 30 | 1 | 18 | 2 | 21 | 90 |
| Grand Total | 4 | 30 | 3 | 37 | 3 | 29 | 10 | 42 | 16 | 47 | 1 | 64 | 1 | 30 | 3 | 34 | 177 |
| Apprch % | 10.8 | 81.1 | 8.1 | | 7.1 | 69 | 23.8 | | 25 | 73.4 | 1.6 | | 2.9 | 88.2 | 8.8 | | |
| Total % | 2.3 | 16.9 | 1.7 | 20.9 | 1.7 | 16.4 | 5.6 | 23.7 | 9 | 26.6 | 0.6 | 36.2 | 0.6 | 16.9 | 1.7 | 19.2 | |

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111th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 4 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 | 0 | 25 | 0 | 25 | 0 | 0 | 50 | 50 | |

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Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/10/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 18 | 18 | 0 | 9 | 9 | 2 | 1 | 3 | 0 | 7 | 7 | 37 |
| 07:15 AM | 0 | 22 | 22 | 1 | 7 | 8 | 0 | 8 | 8 | 0 | 9 | 9 | 47 |
| 07:30 AM | 0 | 5 | 5 | 0 | 7 | 7 | 0 | 12 | 12 | 0 | 21 | 21 | 45 |
| 07:45 AM | 0 | 14 | 14 | 0 | 4 | 4 | 0 | 10 | 10 | 0 | 8 | 8 | 36 |
| Total | 0 | 59 | 59 | 1 | 27 | 28 | 2 | 31 | 33 | 0 | 45 | 45 | 165 |
| 08:00 AM | 0 | 23 | 23 | 0 | 13 | 13 | 0 | 11 | 11 | 0 | 16 | 16 | 63 |
| 08:15 AM | 0 | 11 | 11 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 22 | 22 | 38 |
| 08:30 AM | 0 | 18 | 18 | 1 | 7 | 8 | 0 | 2 | 2 | 0 | 17 | 17 | 45 |
| 08:45 AM | 0 | 9 | 9 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 21 | 21 | 33 |
| Total | 0 | 61 | 61 | 1 | 27 | 28 | 0 | 14 | 14 | 0 | 76 | 76 | 179 |
| Grand Total | 0 | 120 | 120 | 2 | 54 | 56 | 2 | 45 | 47 | 0 | 121 | 121 | 344 |
| Apprch % | 0 | 100 | | 3.6 | 96.4 | | 4.3 | 95.7 | | 0 | 100 | | |
| Total % | 0 | 34.9 | 34.9 | 0.6 | 15.7 | 16.3 | 0.6 | 13.1 | 13.7 | 0 | 35.2 | 35.2 | |

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111th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/10/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 25 | 60 | 16 | 101 | 9 | 78 | 13 | 100 | 12 | 48 | 9 | 69 | 16 | 70 | 20 | 106 | 376 |
| 04:15 PM | 20 | 63 | 18 | 101 | 9 | 66 | 8 | 83 | 9 | 74 | 5 | 88 | 25 | 75 | 19 | 119 | 391 |
| 04:30 PM | 24 | 69 | 13 | 106 | 13 | 56 | 15 | 84 | 19 | 61 | 7 | 87 | 27 | 84 | 17 | 128 | 405 |
| 04:45 PM | 21 | 59 | 9 | 89 | 6 | 79 | 20 | 105 | 8 | 54 | 7 | 69 | 13 | 66 | 15 | 94 | 357 |
| Total | 90 | 251 | 56 | 397 | 37 | 279 | 56 | 372 | 48 | 237 | 28 | 313 | 81 | 295 | 71 | 447 | 1529 |
| 05:00 PM | 16 | 65 | 15 | 96 | 9 | 70 | 16 | 95 | 10 | 58 | 9 | 77 | 19 | 59 | 11 | 89 | 357 |
| 05:15 PM | 12 | 85 | 10 | 107 | 9 | 83 | 18 | 110 | 20 | 48 | 10 | 78 | 20 | 74 | 6 | 100 | 395 |
| 05:30 PM | 20 | 68 | 9 | 97 | 11 | 86 | 17 | 114 | 10 | 48 | 17 | 75 | 15 | 76 | 26 | 117 | 403 |
| 05:45 PM | 16 | 61 | 12 | 89 | 11 | 77 | 18 | 106 | 12 | 53 | 4 | 69 | 14 | 78 | 12 | 104 | 368 |
| Total | 64 | 279 | 46 | 389 | 40 | 316 | 69 | 425 | 52 | 207 | 40 | 299 | 68 | 287 | 55 | 410 | 1523 |
| Grand Total | 154 | 530 | 102 | 786 | 77 | 595 | 125 | 797 | 100 | 444 | 68 | 612 | 149 | 582 | 126 | 857 | 3052 |
| Apprch % | 19.6 | 67.4 | 13 | | 9.7 | 74.7 | 15.7 | | 16.3 | 72.5 | 11.1 | | 17.4 | 67.9 | 14.7 | | |
| Total % | 5 | 17.4 | 3.3 | 25.8 | 2.5 | 19.5 | 4.1 | 26.1 | 3.3 | 14.5 | 2.2 | 20.1 | 4.9 | 19.1 | 4.1 | 28.1 | |
| PC | 150 | 503 | 101 | 754 | 77 | 575 | 114 | 766 | 90 | 421 | 67 | 578 | 148 | 561 | 124 | 833 | 2931 |
| % PC | 97.4 | 94.9 | 99 | 95.9 | 100 | 96.6 | 91.2 | 96.1 | 90 | 94.8 | 98.5 | 94.4 | 99.3 | 96.4 | 98.4 | 97.2 | 96 |
| SU | 4 | 27 | 1 | 32 | 0 | 20 | 11 | 31 | 9 | 23 | 1 | 33 | 1 | 21 | 2 | 24 | 120 |
| % SU | 2.6 | 5.1 | 1 | 4.1 | 0 | 3.4 | 8.8 | 3.9 | 9 | 5.2 | 1.5 | 5.4 | 0.7 | 3.6 | 1.6 | 2.8 | 3.9 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 |

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 25 | 60 | 16 | 101 | 9 | 78 | 13 | 100 | 12 | 48 | 9 | 69 | 16 | 70 | 20 | 106 | 376 |
| 04:15 PM | 20 | 63 | 18 | 101 | 9 | 66 | 8 | 83 | 9 | 74 | 5 | 88 | 25 | 75 | 19 | 119 | 391 |
| 04:30 PM | 24 | 69 | 13 | 106 | 13 | 56 | 15 | 84 | 19 | 61 | 7 | 87 | 27 | 84 | 17 | 128 | 405 |
| 04:45 PM | 21 | 59 | 9 | 89 | 6 | 79 | 20 | 105 | 8 | 54 | 7 | 69 | 13 | 66 | 15 | 94 | 357 |
| Total Volume | 90 | 251 | 56 | 397 | 37 | 279 | 56 | 372 | 48 | 237 | 28 | 313 | 81 | 295 | 71 | 447 | 1529 |
| % App. Total | 22.7 | 63.2 | 14.1 | | 9.9 | 75 | 15.1 | | 15.3 | 75.7 | 8.9 | | 18.1 | 66 | 15.9 | | |
| PHF | .900 | .909 | .778 | .936 | .712 | .883 | .700 | .886 | .632 | .801 | .778 | .889 | .750 | .878 | .888 | .873 | .944 |

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111th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 4 | 0 | 4 | 0 | 4 | 2 | 6 | 1 | 1 | 0 | 2 | 0 | 2 | 1 | 3 | 15 |
| 04:15 PM | 0 | 3 | 0 | 3 | 0 | 4 | 1 | 5 | 0 | 5 | 1 | 6 | 0 | 5 | 1 | 6 | 20 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 2 | 2 | 0 | 4 | 1 | 3 | 0 | 4 | 12 |
| 04:45 PM | 1 | 5 | 0 | 6 | 0 | 4 | 2 | 6 | 1 | 3 | 0 | 4 | 0 | 3 | 0 | 3 | 19 |
| Total | 1 | 13 | 0 | 14 | 0 | 14 | 6 | 20 | 4 | 11 | 1 | 16 | 1 | 13 | 2 | 16 | 66 |
| 05:00 PM | 1 | 4 | 0 | 5 | 0 | 1 | 2 | 3 | 1 | 3 | 0 | 4 | 0 | 2 | 0 | 2 | 14 |
| 05:15 PM | 2 | 3 | 1 | 6 | 0 | 1 | 1 | 2 | 1 | 5 | 0 | 6 | 0 | 1 | 0 | 1 | 15 |
| 05:30 PM | 0 | 4 | 0 | 4 | 0 | 3 | 1 | 4 | 2 | 2 | 0 | 4 | 0 | 2 | 0 | 2 | 14 |
| 05:45 PM | 0 | 3 | 0 | 3 | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 11 |
| Total | 3 | 14 | 1 | 18 | 0 | 6 | 5 | 11 | 5 | 12 | 0 | 17 | 0 | 8 | 0 | 8 | 54 |
| Grand Total | 4 | 27 | 1 | 32 | 0 | 20 | 11 | 31 | 9 | 23 | 1 | 33 | 1 | 21 | 2 | 24 | 120 |
| Apprch % | 12.5 | 84.4 | 3.1 | | 0 | 64.5 | 35.5 | | 27.3 | 69.7 | 3 | | 4.2 | 87.5 | 8.3 | | |
| Total % | 3.3 | 22.5 | 0.8 | 26.7 | 0 | 16.7 | 9.2 | 25.8 | 7.5 | 19.2 | 0.8 | 27.5 | 0.8 | 17.5 | 1.7 | 20 | |

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111th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 111th St From East | | | | Michigan Ave From South | | | | 111th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 100 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | |

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111th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 8 | 8 | 0 | 19 | 19 | 0 | 11 | 11 | 0 | 31 | 31 | 69 |
| 04:15 PM | 0 | 15 | 15 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 40 | 40 | 67 |
| 04:30 PM | 0 | 23 | 23 | 1 | 11 | 12 | 0 | 1 | 1 | 0 | 30 | 30 | 66 |
| 04:45 PM | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 37 | 37 | 49 |
| Total | 0 | 53 | 53 | 1 | 42 | 43 | 0 | 17 | 17 | 0 | 138 | 138 | 251 |
| 05:00 PM | 0 | 14 | 14 | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 32 | 32 | 58 |
| 05:15 PM | 0 | 3 | 3 | 1 | 15 | 16 | 0 | 2 | 2 | 0 | 30 | 30 | 51 |
| 05:30 PM | 0 | 13 | 13 | 0 | 13 | 13 | 0 | 5 | 5 | 0 | 25 | 25 | 56 |
| 05:45 PM | 0 | 8 | 8 | 0 | 13 | 13 | 0 | 10 | 10 | 0 | 38 | 38 | 69 |
| Total | 0 | 38 | 38 | 1 | 53 | 54 | 0 | 17 | 17 | 0 | 125 | 125 | 234 |
| Grand Total | 0 | 91 | 91 | 2 | 95 | 97 | 0 | 34 | 34 | 0 | 263 | 263 | 485 |
| Apprch % | 0 | 100 | | 2.1 | 97.9 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 18.8 | 18.8 | 0.4 | 19.6 | 20 | 0 | 7 | 7 | 0 | 54.2 | 54.2 | |

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111th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 1

Groups Printed- PC - SU - MU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 3 | 11 | 7 | 21 | 3 | 62 | 2 | 67 | 14 | 49 | 4 | 67 | 5 | 31 | 7 | 43 | 198 |
| 07:15 AM | 3 | 14 | 8 | 25 | 9 | 49 | 7 | 65 | 14 | 52 | 9 | 75 | 5 | 40 | 4 | 49 | 214 |
| 07:30 AM | 3 | 11 | 6 | 20 | 18 | 59 | 5 | 82 | 24 | 55 | 4 | 83 | 6 | 49 | 15 | 70 | 255 |
| 07:45 AM | 7 | 14 | 12 | 33 | 10 | 77 | 4 | 91 | 15 | 78 | 10 | 103 | 5 | 64 | 13 | 82 | 309 |
| Total | 16 | 50 | 33 | 99 | 40 | 247 | 18 | 305 | 67 | 234 | 27 | 328 | 21 | 184 | 39 | 244 | 976 |
| 08:00 AM | 6 | 24 | 7 | 37 | 14 | 78 | 10 | 102 | 19 | 62 | 11 | 92 | 4 | 49 | 6 | 59 | 290 |
| 08:15 AM | 0 | 25 | 12 | 37 | 19 | 66 | 9 | 94 | 11 | 51 | 11 | 73 | 1 | 42 | 5 | 48 | 252 |
| 08:30 AM | 4 | 31 | 8 | 43 | 22 | 61 | 7 | 90 | 24 | 60 | 7 | 91 | 6 | 55 | 11 | 72 | 296 |
| 08:45 AM | 2 | 29 | 8 | 39 | 9 | 67 | 5 | 81 | 20 | 59 | 12 | 91 | 6 | 70 | 8 | 84 | 295 |
| Total | 12 | 109 | 35 | 156 | 64 | 272 | 31 | 367 | 74 | 232 | 41 | 347 | 17 | 216 | 30 | 263 | 1133 |
| Grand Total | 28 | 159 | 68 | 255 | 104 | 519 | 49 | 672 | 141 | 466 | 68 | 675 | 38 | 400 | 69 | 507 | 2109 |
| Apprch % | 11 | 62.4 | 26.7 | | 15.5 | 77.2 | 7.3 | | 20.9 | 69 | 10.1 | | 7.5 | 78.9 | 13.6 | | |
| Total % | 1.3 | 7.5 | 3.2 | 12.1 | 4.9 | 24.6 | 2.3 | 31.9 | 6.7 | 22.1 | 3.2 | 32 | 1.8 | 19 | 3.3 | 24 | |
| PC | 25 | 153 | 67 | 245 | 101 | 489 | 47 | 637 | 135 | 454 | 65 | 654 | 34 | 369 | 63 | 466 | 2002 |
| % PC | 89.3 | 96.2 | 98.5 | 96.1 | 97.1 | 94.2 | 95.9 | 94.8 | 95.7 | 97.4 | 95.6 | 96.9 | 89.5 | 92.2 | 91.3 | 91.9 | 94.9 |
| SU | 3 | 6 | 1 | 10 | 3 | 26 | 2 | 31 | 6 | 12 | 3 | 21 | 4 | 29 | 5 | 38 | 100 |
| % SU | 10.7 | 3.8 | 1.5 | 3.9 | 2.9 | 5 | 4.1 | 4.6 | 4.3 | 2.6 | 4.4 | 3.1 | 10.5 | 7.2 | 7.2 | 7.5 | 4.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 7 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0.5 | 1.4 | 0.6 | 0.3 |

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 7 | 14 | 12 | 33 | 10 | 77 | 4 | 91 | 15 | 78 | 10 | 103 | 5 | 64 | 13 | 82 | 309 |
| 08:00 AM | 6 | 24 | 7 | 37 | 14 | 78 | 10 | 102 | 19 | 62 | 11 | 92 | 4 | 49 | 6 | 59 | 290 |
| 08:15 AM | 0 | 25 | 12 | 37 | 19 | 66 | 9 | 94 | 11 | 51 | 11 | 73 | 1 | 42 | 5 | 48 | 252 |
| 08:30 AM | 4 | 31 | 8 | 43 | 22 | 61 | 7 | 90 | 24 | 60 | 7 | 91 | 6 | 55 | 11 | 72 | 296 |
| Total Volume | 17 | 94 | 39 | 150 | 65 | 282 | 30 | 377 | 69 | 251 | 39 | 359 | 16 | 210 | 35 | 261 | 1147 |
| % App. Total | 11.3 | 62.7 | 26 | | 17.2 | 74.8 | 8 | | 19.2 | 69.9 | 10.9 | | 6.1 | 80.5 | 13.4 | | |
| PHF | .607 | .758 | .813 | .872 | .739 | .904 | .750 | .924 | .719 | .804 | .886 | .871 | .667 | .820 | .673 | .796 | .928 |

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111th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 2

Groups Printed- SU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 3 | 0 | 4 | 1 | 4 | 2 | 7 | 15 |
| 07:15 AM | 1 | 1 | 1 | 3 | 1 | 3 | 0 | 4 | 0 | 1 | 1 | 2 | 1 | 3 | 1 | 5 | 14 |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 1 | 1 | 0 | 2 | 1 | 3 | 1 | 5 | 14 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 2 | 1 | 2 | 0 | 3 | 8 |
| Total | 1 | 1 | 1 | 3 | 2 | 16 | 0 | 18 | 2 | 7 | 1 | 10 | 4 | 12 | 4 | 20 | 51 |
| 08:00 AM | 2 | 2 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 0 | 4 | 1 | 5 | 14 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 1 | 0 | 1 | 2 | 0 | 4 | 0 | 4 | 11 |
| 08:30 AM | 0 | 2 | 0 | 2 | 1 | 1 | 1 | 3 | 3 | 3 | 0 | 6 | 0 | 3 | 0 | 3 | 14 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 6 | 0 | 6 | 10 |
| Total | 2 | 5 | 0 | 7 | 1 | 10 | 2 | 13 | 4 | 5 | 2 | 11 | 0 | 17 | 1 | 18 | 49 |
| Grand Total | 3 | 6 | 1 | 10 | 3 | 26 | 2 | 31 | 6 | 12 | 3 | 21 | 4 | 29 | 5 | 38 | 100 |
| Apprch % | 30 | 60 | 10 | | 9.7 | 83.9 | 6.5 | | 28.6 | 57.1 | 14.3 | | 10.5 | 76.3 | 13.2 | | |
| Total % | 3 | 6 | 1 | 10 | 3 | 26 | 2 | 31 | 6 | 12 | 3 | 21 | 4 | 29 | 5 | 38 | |

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111th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 3

Groups Printed- MU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 7 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 66.7 | 33.3 | | |
| Total % | 0 | 0 | 0 | | 0 | 57.1 | 0 | 57.1 | 0 | 0 | 0 | | 0 | 28.6 | 14.3 | 42.9 | |

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111th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/6/2012

Page No : 4

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 111th St Crossing East Leg | | | State St Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 4 | 4 | 0 | 3 | 3 | 1 | 1 | 2 | 0 | 2 | 2 | 11 |
| 07:15 AM | 1 | 5 | 6 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 3 | 3 | 17 |
| 07:30 AM | 0 | 9 | 9 | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 2 | 2 | 17 |
| 07:45 AM | 0 | 6 | 6 | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 11 |
| Total | 1 | 24 | 25 | 1 | 8 | 9 | 1 | 12 | 13 | 0 | 9 | 9 | 56 |
| 08:00 AM | 0 | 6 | 6 | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 5 | 5 | 17 |
| 08:15 AM | 1 | 4 | 5 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 3 | 3 | 12 |
| 08:30 AM | 0 | 9 | 9 | 1 | 4 | 5 | 0 | 6 | 6 | 0 | 3 | 3 | 23 |
| 08:45 AM | 0 | 9 | 9 | 0 | 4 | 4 | 0 | 8 | 8 | 0 | 4 | 4 | 25 |
| Total | 1 | 28 | 29 | 1 | 10 | 11 | 0 | 22 | 22 | 0 | 15 | 15 | 77 |
| Grand Total | 2 | 52 | 54 | 2 | 18 | 20 | 1 | 34 | 35 | 0 | 24 | 24 | 133 |
| Apprch % | 3.7 | 96.3 | | 10 | 90 | | 2.9 | 97.1 | | 0 | 100 | | |
| Total % | 1.5 | 39.1 | 40.6 | 1.5 | 13.5 | 15 | 0.8 | 25.6 | 26.3 | 0 | 18 | 18 | |

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111th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 5

Groups Printed- PC - SU - MU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 14 | 34 | 18 | 66 | 16 | 61 | 21 | 98 | 34 | 52 | 10 | 96 | 9 | 90 | 15 | 114 | 374 |
| 04:15 PM | 8 | 42 | 23 | 73 | 15 | 65 | 18 | 98 | 20 | 56 | 13 | 89 | 7 | 77 | 14 | 98 | 358 |
| 04:30 PM | 6 | 47 | 17 | 70 | 11 | 74 | 19 | 104 | 19 | 54 | 9 | 82 | 15 | 52 | 23 | 90 | 346 |
| 04:45 PM | 12 | 47 | 19 | 78 | 15 | 75 | 21 | 111 | 25 | 34 | 11 | 70 | 7 | 60 | 13 | 80 | 339 |
| Total | 40 | 170 | 77 | 287 | 57 | 275 | 79 | 411 | 98 | 196 | 43 | 337 | 38 | 279 | 65 | 382 | 1417 |
| 05:00 PM | 11 | 53 | 15 | 79 | 18 | 84 | 20 | 122 | 21 | 62 | 13 | 96 | 12 | 62 | 11 | 85 | 382 |
| 05:15 PM | 11 | 44 | 11 | 66 | 14 | 75 | 17 | 106 | 25 | 54 | 10 | 89 | 7 | 61 | 11 | 79 | 340 |
| 05:30 PM | 13 | 39 | 20 | 72 | 23 | 107 | 16 | 146 | 17 | 49 | 9 | 75 | 11 | 75 | 10 | 96 | 389 |
| 05:45 PM | 13 | 39 | 18 | 70 | 15 | 96 | 13 | 124 | 32 | 46 | 10 | 88 | 9 | 57 | 9 | 75 | 357 |
| Total | 48 | 175 | 64 | 287 | 70 | 362 | 66 | 498 | 95 | 211 | 42 | 348 | 39 | 255 | 41 | 335 | 1468 |
| Grand Total | 88 | 345 | 141 | 574 | 127 | 637 | 145 | 909 | 193 | 407 | 85 | 685 | 77 | 534 | 106 | 717 | 2885 |
| Apprch % | 15.3 | 60.1 | 24.6 | | 14 | 70.1 | 16 | | 28.2 | 59.4 | 12.4 | | 10.7 | 74.5 | 14.8 | | |
| Total % | 3.1 | 12 | 4.9 | 19.9 | 4.4 | 22.1 | 5 | 31.5 | 6.7 | 14.1 | 2.9 | 23.7 | 2.7 | 18.5 | 3.7 | 24.9 | |
| PC | 87 | 344 | 141 | 572 | 127 | 622 | 145 | 894 | 188 | 403 | 85 | 676 | 76 | 519 | 102 | 697 | 2839 |
| % PC | 98.9 | 99.7 | 100 | 99.7 | 100 | 97.6 | 100 | 98.3 | 97.4 | 99 | 100 | 98.7 | 98.7 | 97.2 | 96.2 | 97.2 | 98.4 |
| SU | 1 | 1 | 0 | 2 | 0 | 15 | 0 | 15 | 5 | 4 | 0 | 9 | 1 | 15 | 3 | 19 | 45 |
| % SU | 1.1 | 0.3 | 0 | 0.3 | 0 | 2.4 | 0 | 1.7 | 2.6 | 1 | 0 | 1.3 | 1.3 | 2.8 | 2.8 | 2.6 | 1.6 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0.1 | 0 |

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|--|------------------------|-----------|-----------|------------|-----------------------|------------|-----------|------------|------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 11 | 53 | 15 | 79 | 18 | 84 | 20 | 122 | 21 | 62 | 13 | 96 | 12 | 62 | 11 | 85 | 382 |
| 05:15 PM | 11 | 44 | 11 | 66 | 14 | 75 | 17 | 106 | 25 | 54 | 10 | 89 | 7 | 61 | 11 | 79 | 340 |
| 05:30 PM | 13 | 39 | 20 | 72 | 23 | 107 | 16 | 146 | 17 | 49 | 9 | 75 | 11 | 75 | 10 | 96 | 389 |
| 05:45 PM | 13 | 39 | 18 | 70 | 15 | 96 | 13 | 124 | 32 | 46 | 10 | 88 | 9 | 57 | 9 | 75 | 357 |
| Total Volume | 48 | 175 | 64 | 287 | 70 | 362 | 66 | 498 | 95 | 211 | 42 | 348 | 39 | 255 | 41 | 335 | 1468 |
| % App. Total | 16.7 | 61 | 22.3 | | 14.1 | 72.7 | 13.3 | | 27.3 | 60.6 | 12.1 | | 11.6 | 76.1 | 12.2 | | |
| PHF | .923 | .825 | .800 | .908 | .761 | .846 | .825 | .853 | .742 | .851 | .808 | .906 | .813 | .850 | .932 | .872 | .943 |

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111th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 6

Groups Printed- SU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 8 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 7 |
| 04:30 PM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 8 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 1 | 1 | 0 | 2 | 0 | 10 | 0 | 10 | 3 | 0 | 0 | 3 | 1 | 7 | 2 | 10 | 25 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 4 | 0 | 2 | 0 | 2 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 4 | 7 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 4 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 2 | 4 | 0 | 6 | 0 | 8 | 1 | 9 | 20 |
| Grand Total | 1 | 1 | 0 | 2 | 0 | 15 | 0 | 15 | 5 | 4 | 0 | 9 | 1 | 15 | 3 | 19 | 45 |
| Apprch % | 50 | 50 | 0 | | 0 | 100 | 0 | | 55.6 | 44.4 | 0 | | 5.3 | 78.9 | 15.8 | | |
| Total % | 2.2 | 2.2 | 0 | 4.4 | 0 | 33.3 | 0 | 33.3 | 11.1 | 8.9 | 0 | 20 | 2.2 | 33.3 | 6.7 | 42.2 | |

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111th St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 7

Groups Printed- MU

| | State St From North | | | | 111th St From East | | | | State St From South | | | | 111th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | |

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111th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/6/2012
Page No : 8

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 111th St Crossing East Leg | | | State St Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 14 | 14 | 0 | 1 | 1 | 4 | 6 | 10 | 1 | 7 | 8 | 33 |
| 04:15 PM | 0 | 16 | 16 | 0 | 4 | 4 | 1 | 12 | 13 | 0 | 4 | 4 | 37 |
| 04:30 PM | 2 | 12 | 14 | 0 | 11 | 11 | 0 | 11 | 11 | 1 | 2 | 3 | 39 |
| 04:45 PM | 0 | 6 | 6 | 0 | 2 | 2 | 0 | 13 | 13 | 3 | 6 | 9 | 30 |
| Total | 2 | 48 | 50 | 0 | 18 | 18 | 5 | 42 | 47 | 5 | 19 | 24 | 139 |
| 05:00 PM | 0 | 8 | 8 | 1 | 5 | 6 | 0 | 6 | 6 | 1 | 5 | 6 | 26 |
| 05:15 PM | 0 | 5 | 5 | 2 | 7 | 9 | 0 | 12 | 12 | 0 | 3 | 3 | 29 |
| 05:30 PM | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 6 | 6 | 0 | 6 | 6 | 20 |
| 05:45 PM | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 7 | 7 | 0 | 2 | 2 | 16 |
| Total | 0 | 20 | 20 | 3 | 20 | 23 | 0 | 31 | 31 | 1 | 16 | 17 | 91 |
| Grand Total | 2 | 68 | 70 | 3 | 38 | 41 | 5 | 73 | 78 | 6 | 35 | 41 | 230 |
| Apprch % | 2.9 | 97.1 | | 7.3 | 92.7 | | 6.4 | 93.6 | | 14.6 | 85.4 | | |
| Total % | 0.9 | 29.6 | 30.4 | 1.3 | 16.5 | 17.8 | 2.2 | 31.7 | 33.9 | 2.6 | 15.2 | 17.8 | |

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111th St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/16/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 15 | 3 | 24 | 8 | 31 | 5 | 44 | 10 | 21 | 3 | 34 | 1 | 45 | 4 | 50 | 152 |
| 07:15 AM | 4 | 16 | 8 | 28 | 2 | 48 | 5 | 55 | 3 | 29 | 6 | 38 | 1 | 55 | 6 | 62 | 183 |
| 07:30 AM | 4 | 23 | 9 | 36 | 10 | 49 | 1 | 60 | 8 | 33 | 3 | 44 | 7 | 90 | 4 | 101 | 241 |
| 07:45 AM | 6 | 19 | 11 | 36 | 10 | 68 | 5 | 83 | 10 | 33 | 4 | 47 | 6 | 56 | 12 | 74 | 240 |
| Total | 20 | 73 | 31 | 124 | 30 | 196 | 16 | 242 | 31 | 116 | 16 | 163 | 15 | 246 | 26 | 287 | 816 |
| 08:00 AM | 3 | 29 | 11 | 43 | 10 | 68 | 2 | 80 | 4 | 29 | 3 | 36 | 6 | 81 | 5 | 92 | 251 |
| 08:15 AM | 5 | 29 | 17 | 51 | 8 | 77 | 8 | 93 | 6 | 45 | 3 | 54 | 5 | 79 | 14 | 98 | 296 |
| 08:30 AM | 12 | 23 | 16 | 51 | 7 | 59 | 2 | 68 | 5 | 25 | 7 | 37 | 10 | 86 | 6 | 102 | 258 |
| 08:45 AM | 4 | 26 | 12 | 42 | 10 | 97 | 5 | 112 | 11 | 25 | 9 | 45 | 5 | 69 | 10 | 84 | 283 |
| Total | 24 | 107 | 56 | 187 | 35 | 301 | 17 | 353 | 26 | 124 | 22 | 172 | 26 | 315 | 35 | 376 | 1088 |
| Grand Total | 44 | 180 | 87 | 311 | 65 | 497 | 33 | 595 | 57 | 240 | 38 | 335 | 41 | 561 | 61 | 663 | 1904 |
| Apprch % | 14.1 | 57.9 | 28 | | 10.9 | 83.5 | 5.5 | | 17 | 71.6 | 11.3 | | 6.2 | 84.6 | 9.2 | | |
| Total % | 2.3 | 9.5 | 4.6 | 16.3 | 3.4 | 26.1 | 1.7 | 31.2 | 3 | 12.6 | 2 | 17.6 | 2.2 | 29.5 | 3.2 | 34.8 | |
| PC | 42 | 175 | 83 | 300 | 60 | 458 | 30 | 548 | 56 | 227 | 37 | 320 | 40 | 524 | 56 | 620 | 1788 |
| % PC | 95.5 | 97.2 | 95.4 | 96.5 | 92.3 | 92.2 | 90.9 | 92.1 | 98.2 | 94.6 | 97.4 | 95.5 | 97.6 | 93.4 | 91.8 | 93.5 | 93.9 |
| SU | 2 | 5 | 3 | 10 | 5 | 38 | 3 | 46 | 1 | 12 | 1 | 14 | 1 | 35 | 4 | 40 | 110 |
| % SU | 4.5 | 2.8 | 3.4 | 3.2 | 7.7 | 7.6 | 9.1 | 7.7 | 1.8 | 5 | 2.6 | 4.2 | 2.4 | 6.2 | 6.6 | 6 | 5.8 |
| MU | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 6 |
| % MU | 0 | 0 | 1.1 | 0.3 | 0 | 0.2 | 0 | 0.2 | 0 | 0.4 | 0 | 0.3 | 0 | 0.4 | 1.6 | 0.5 | 0.3 |

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|--|-----------------------------|-----------|-----------|------------|-----------------------|-----------|----------|------------|-----------------------------|-----------|----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 3 | 29 | 11 | 43 | 10 | 68 | 2 | 80 | 4 | 29 | 3 | 36 | 6 | 81 | 5 | 92 | 251 |
| 08:15 AM | 5 | 29 | 17 | 51 | 8 | 77 | 8 | 93 | 6 | 45 | 3 | 54 | 5 | 79 | 14 | 98 | 296 |
| 08:30 AM | 12 | 23 | 16 | 51 | 7 | 59 | 2 | 68 | 5 | 25 | 7 | 37 | 10 | 86 | 6 | 102 | 258 |
| 08:45 AM | 4 | 26 | 12 | 42 | 10 | 97 | 5 | 112 | 11 | 25 | 9 | 45 | 5 | 69 | 10 | 84 | 283 |
| Total Volume | 24 | 107 | 56 | 187 | 35 | 301 | 17 | 353 | 26 | 124 | 22 | 172 | 26 | 315 | 35 | 376 | 1088 |
| % App. Total | 12.8 | 57.2 | 29.9 | | 9.9 | 85.3 | 4.8 | | 15.1 | 72.1 | 12.8 | | 6.9 | 83.8 | 9.3 | | |
| PHF | .500 | .922 | .824 | .917 | .875 | .776 | .531 | .788 | .591 | .689 | .611 | .796 | .650 | .916 | .625 | .922 | .919 |

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111th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 4 | 9 |
| 07:15 AM | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 0 | 5 | 0 | 5 | 0 | 5 | 1 | 6 | 15 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 5 | 0 | 5 | 11 |
| 07:45 AM | 0 | 1 | 1 | 2 | 1 | 6 | 2 | 9 | 0 | 1 | 0 | 1 | 1 | 4 | 0 | 5 | 17 |
| Total | 0 | 2 | 2 | 4 | 1 | 16 | 3 | 20 | 1 | 7 | 0 | 8 | 1 | 17 | 2 | 20 | 52 |
| 08:00 AM | 1 | 2 | 0 | 3 | 3 | 6 | 0 | 9 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 18 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 4 | 11 |
| 08:30 AM | 1 | 1 | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 13 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 1 | 1 | 2 | 0 | 4 | 2 | 6 | 16 |
| Total | 2 | 3 | 1 | 6 | 4 | 22 | 0 | 26 | 0 | 5 | 1 | 6 | 0 | 18 | 2 | 20 | 58 |
| Grand Total | 2 | 5 | 3 | 10 | 5 | 38 | 3 | 46 | 1 | 12 | 1 | 14 | 1 | 35 | 4 | 40 | 110 |
| Apprch % | 20 | 50 | 30 | | 10.9 | 82.6 | 6.5 | | 7.1 | 85.7 | 7.1 | | 2.5 | 87.5 | 10 | | |
| Total % | 1.8 | 4.5 | 2.7 | 9.1 | 4.5 | 34.5 | 2.7 | 41.8 | 0.9 | 10.9 | 0.9 | 12.7 | 0.9 | 31.8 | 3.6 | 36.4 | |

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111th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 |
| 07:45 AM | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Grand Total | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 6 |
| Apprch % | 0 | 0 | 100 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 66.7 | 33.3 | | |
| Total % | 0 | 0 | 16.7 | 16.7 | 0 | 16.7 | 0 | 16.7 | 0 | 16.7 | 0 | 16.7 | 0 | 33.3 | 16.7 | 50 | |

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111th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/16/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 4 | 4 | 12 |
| 07:15 AM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 5 | 5 | 13 |
| 07:30 AM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 8 | 8 | 16 |
| 07:45 AM | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 1 | 1 | 16 |
| Total | 0 | 18 | 18 | 0 | 7 | 7 | 0 | 14 | 14 | 0 | 18 | 18 | 57 |
| 08:00 AM | 1 | 11 | 12 | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 14 | 14 | 32 |
| 08:15 AM | 0 | 5 | 5 | 0 | 7 | 7 | 0 | 7 | 7 | 1 | 5 | 6 | 25 |
| 08:30 AM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 7 | 7 | 0 | 1 | 1 | 15 |
| 08:45 AM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 4 | 4 | 9 |
| Total | 1 | 22 | 23 | 0 | 16 | 16 | 0 | 17 | 17 | 1 | 24 | 25 | 81 |
| Grand Total | 1 | 40 | 41 | 0 | 23 | 23 | 0 | 31 | 31 | 1 | 42 | 43 | 138 |
| Apprch % | 2.4 | 97.6 | | 0 | 100 | | 0 | 100 | | 2.3 | 97.7 | | |
| Total % | 0.7 | 29 | 29.7 | 0 | 16.7 | 16.7 | 0 | 22.5 | 22.5 | 0.7 | 30.4 | 31.2 | |

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111th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/16/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 11 | 42 | 9 | 62 | 14 | 70 | 12 | 96 | 8 | 27 | 4 | 39 | 3 | 78 | 11 | 92 | 289 |
| 04:15 PM | 4 | 40 | 16 | 60 | 7 | 77 | 12 | 96 | 7 | 19 | 7 | 33 | 6 | 73 | 7 | 86 | 275 |
| 04:30 PM | 6 | 36 | 10 | 52 | 3 | 63 | 10 | 76 | 7 | 26 | 9 | 42 | 10 | 69 | 8 | 87 | 257 |
| 04:45 PM | 5 | 48 | 14 | 67 | 12 | 68 | 11 | 91 | 8 | 19 | 4 | 31 | 11 | 56 | 6 | 73 | 262 |
| Total | 26 | 166 | 49 | 241 | 36 | 278 | 45 | 359 | 30 | 91 | 24 | 145 | 30 | 276 | 32 | 338 | 1083 |
| 05:00 PM | 12 | 31 | 12 | 55 | 13 | 80 | 14 | 107 | 7 | 20 | 3 | 30 | 6 | 55 | 1 | 62 | 254 |
| 05:15 PM | 10 | 35 | 14 | 59 | 9 | 73 | 8 | 90 | 10 | 23 | 4 | 37 | 10 | 78 | 10 | 98 | 284 |
| 05:30 PM | 10 | 34 | 17 | 61 | 13 | 65 | 5 | 83 | 2 | 26 | 7 | 35 | 4 | 77 | 7 | 88 | 267 |
| 05:45 PM | 8 | 42 | 7 | 57 | 6 | 67 | 5 | 78 | 11 | 22 | 8 | 41 | 7 | 79 | 1 | 87 | 263 |
| Total | 40 | 142 | 50 | 232 | 41 | 285 | 32 | 358 | 30 | 91 | 22 | 143 | 27 | 289 | 19 | 335 | 1068 |
| Grand Total | 66 | 308 | 99 | 473 | 77 | 563 | 77 | 717 | 60 | 182 | 46 | 288 | 57 | 565 | 51 | 673 | 2151 |
| Apprch % | 14 | 65.1 | 20.9 | | 10.7 | 78.5 | 10.7 | | 20.8 | 63.2 | 16 | | 8.5 | 84 | 7.6 | | |
| Total % | 3.1 | 14.3 | 4.6 | 22 | 3.6 | 26.2 | 3.6 | 33.3 | 2.8 | 8.5 | 2.1 | 13.4 | 2.6 | 26.3 | 2.4 | 31.3 | |
| PC | 65 | 306 | 97 | 468 | 75 | 543 | 76 | 694 | 58 | 181 | 46 | 285 | 56 | 547 | 50 | 653 | 2100 |
| % PC | 98.5 | 99.4 | 98 | 98.9 | 97.4 | 96.4 | 98.7 | 96.8 | 96.7 | 99.5 | 100 | 99 | 98.2 | 96.8 | 98 | 97 | 97.6 |
| SU | 1 | 2 | 2 | 5 | 2 | 20 | 1 | 23 | 2 | 1 | 0 | 3 | 1 | 17 | 0 | 18 | 49 |
| % SU | 1.5 | 0.6 | 2 | 1.1 | 2.6 | 3.6 | 1.3 | 3.2 | 3.3 | 0.5 | 0 | 1 | 1.8 | 3 | 0 | 2.7 | 2.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 2 | 0.3 | 0.1 |

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 11 | 42 | 9 | 62 | 14 | 70 | 12 | 96 | 8 | 27 | 4 | 39 | 3 | 78 | 11 | 92 | 289 |
| 04:15 PM | 4 | 40 | 16 | 60 | 7 | 77 | 12 | 96 | 7 | 19 | 7 | 33 | 6 | 73 | 7 | 86 | 275 |
| 04:30 PM | 6 | 36 | 10 | 52 | 3 | 63 | 10 | 76 | 7 | 26 | 9 | 42 | 10 | 69 | 8 | 87 | 257 |
| 04:45 PM | 5 | 48 | 14 | 67 | 12 | 68 | 11 | 91 | 8 | 19 | 4 | 31 | 11 | 56 | 6 | 73 | 262 |
| Total Volume | 26 | 166 | 49 | 241 | 36 | 278 | 45 | 359 | 30 | 91 | 24 | 145 | 30 | 276 | 32 | 338 | 1083 |
| % App. Total | 10.8 | 68.9 | 20.3 | | 10 | 77.4 | 12.5 | | 20.7 | 62.8 | 16.6 | | 8.9 | 81.7 | 9.5 | | |
| PHF | .591 | .865 | .766 | .899 | .643 | .903 | .938 | .935 | .938 | .843 | .667 | .863 | .682 | .885 | .727 | .918 | .937 |

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111th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 0 | 0 | 1 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 9 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 04:30 PM | 0 | 1 | 0 | 1 | 1 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 9 |
| 04:45 PM | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 8 |
| Total | 1 | 2 | 0 | 3 | 2 | 12 | 0 | 14 | 0 | 1 | 0 | 1 | 1 | 10 | 0 | 11 | 29 |
| 05:00 PM | 0 | 0 | 1 | 1 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 9 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 05:30 PM | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 5 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 2 | 2 | 0 | 8 | 1 | 9 | 2 | 0 | 0 | 2 | 0 | 7 | 0 | 7 | 20 |
| Grand Total | 1 | 2 | 2 | 5 | 2 | 20 | 1 | 23 | 2 | 1 | 0 | 3 | 1 | 17 | 0 | 18 | 49 |
| Apprch % | 20 | 40 | 40 | | 8.7 | 87 | 4.3 | | 66.7 | 33.3 | 0 | | 5.6 | 94.4 | 0 | | |
| Total % | 2 | 4.1 | 4.1 | 10.2 | 4.1 | 40.8 | 2 | 46.9 | 4.1 | 2 | 0 | 6.1 | 2 | 34.7 | 0 | 36.7 | |

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111th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 111th St From East | | | | Wentworth Ave From South | | | | 111th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | | |
| Total % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | 100 | |

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111th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/16/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 111th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 111th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 6 |
| 04:15 PM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 5 | 5 | 0 | 21 | 21 | 32 |
| 04:30 PM | 0 | 3 | 3 | 0 | 8 | 8 | 0 | 6 | 6 | 0 | 6 | 6 | 23 |
| 04:45 PM | 0 | 14 | 14 | 0 | 3 | 3 | 0 | 7 | 7 | 2 | 5 | 7 | 31 |
| Total | 0 | 19 | 19 | 1 | 17 | 18 | 0 | 20 | 20 | 2 | 33 | 35 | 92 |
| 05:00 PM | 2 | 10 | 12 | 2 | 8 | 10 | 1 | 6 | 7 | 1 | 18 | 19 | 48 |
| 05:15 PM | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 5 | 5 | 16 |
| 05:30 PM | 0 | 8 | 8 | 0 | 10 | 10 | 0 | 8 | 8 | 0 | 13 | 13 | 39 |
| 05:45 PM | 1 | 8 | 9 | 0 | 3 | 3 | 1 | 9 | 10 | 3 | 23 | 26 | 48 |
| Total | 3 | 32 | 35 | 2 | 24 | 26 | 2 | 25 | 27 | 4 | 59 | 63 | 151 |
| Grand Total | 3 | 51 | 54 | 3 | 41 | 44 | 2 | 45 | 47 | 6 | 92 | 98 | 243 |
| Apprch % | 5.6 | 94.4 | | 6.8 | 93.2 | | 4.3 | 95.7 | | 6.1 | 93.9 | | |
| Total % | 1.2 | 21 | 22.2 | 1.2 | 16.9 | 18.1 | 0.8 | 18.5 | 19.3 | 2.5 | 37.9 | 40.3 | |

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112th PI and Hamlet St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Hamlet St From North | | | | 112th PI From East | | | | Hamlet St From South | | | | 112th PI From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 2 | 12 | 0 | 14 | 4 | 94 | 81 | 179 | 0 | 10 | 102 | 112 | 305 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 18 | 0 | 19 | 8 | 135 | 112 | 255 | 0 | 8 | 111 | 119 | 393 |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 16 | 13 | 128 | 148 | 289 | 0 | 8 | 91 | 99 | 404 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 16 | 11 | 155 | 131 | 297 | 0 | 19 | 81 | 100 | 413 |
| Total | 0 | 0 | 0 | 0 | 4 | 61 | 0 | 65 | 36 | 512 | 472 | 1020 | 0 | 45 | 385 | 430 | 1515 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 13 | 13 | 156 | 109 | 278 | 0 | 13 | 101 | 114 | 405 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 13 | 0 | 14 | 21 | 158 | 143 | 322 | 0 | 13 | 75 | 88 | 424 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 16 | 110 | 99 | 225 | 0 | 10 | 100 | 110 | 346 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 26 | 12 | 95 | 115 | 222 | 0 | 11 | 92 | 103 | 351 |
| Total | 0 | 0 | 0 | 0 | 3 | 61 | 0 | 64 | 62 | 519 | 466 | 1047 | 0 | 47 | 368 | 415 | 1526 |
| Grand Total | 0 | 0 | 0 | 0 | 7 | 122 | 0 | 129 | 98 | 1031 | 938 | 2067 | 0 | 92 | 753 | 845 | 3041 |
| Apprch % | 0 | 0 | 0 | | 5.4 | 94.6 | 0 | | 4.7 | 49.9 | 45.4 | | 0 | 10.9 | 89.1 | | |
| Total % | 0 | 0 | 0 | 0 | 0.2 | 4 | 0 | 4.2 | 3.2 | 33.9 | 30.8 | 68 | 0 | 3 | 24.8 | 27.8 | |
| PC | 0 | 0 | 0 | 0 | 7 | 119 | 0 | 126 | 97 | 1010 | 921 | 2028 | 0 | 90 | 734 | 824 | 2978 |
| % PC | 0 | 0 | 0 | 0 | 100 | 97.5 | 0 | 97.7 | 99 | 98 | 98.2 | 98.1 | 0 | 97.8 | 97.5 | 97.5 | 97.9 |
| SU | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 19 | 12 | 32 | 0 | 2 | 11 | 13 | 48 |
| % SU | 0 | 0 | 0 | 0 | 0 | 2.5 | 0 | 2.3 | 1 | 1.8 | 1.3 | 1.5 | 0 | 2.2 | 1.5 | 1.5 | 1.6 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 7 | 0 | 0 | 8 | 8 | 15 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.5 | 0.3 | 0 | 0 | 1.1 | 0.9 | 0.5 |

| | Hamlet St From North | | | | 112th PI From East | | | | Hamlet St From South | | | | 112th PI From West | | | | |
|--|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 16 | 13 | 128 | 148 | 289 | 0 | 8 | 91 | 99 | 404 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 16 | 11 | 155 | 131 | 297 | 0 | 19 | 81 | 100 | 413 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 13 | 13 | 156 | 109 | 278 | 0 | 13 | 101 | 114 | 405 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 13 | 0 | 14 | 21 | 158 | 143 | 322 | 0 | 13 | 75 | 88 | 424 |
| Total Volume | 0 | 0 | 0 | 0 | 3 | 56 | 0 | 59 | 58 | 597 | 531 | 1186 | 0 | 53 | 348 | 401 | 1646 |
| % App. Total | 0 | 0 | 0 | | 5.1 | 94.9 | 0 | | 4.9 | 50.3 | 44.8 | | 0 | 13.2 | 86.8 | | |
| PHF | .000 | .000 | .000 | .000 | .750 | .875 | .000 | .922 | .690 | .945 | .897 | .921 | .000 | .697 | .861 | .879 | .971 |

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112th Pl and Hamlet St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 2

Groups Printed- SU

| | Hamlet St From North | | | | 112th Pl From East | | | | Hamlet St From South | | | | 112th Pl From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 4 | 0 | 1 | 1 | 2 | 7 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 5 | 7 | 0 | 0 | 2 | 2 | 10 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 5 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 2 | 7 | 0 | 0 | 1 | 1 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 11 | 9 | 21 | 0 | 2 | 4 | 6 | 30 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 3 | 3 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 6 | 0 | 0 | 2 | 2 | 8 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 4 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 11 | 0 | 0 | 7 | 7 | 18 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 19 | 12 | 32 | 0 | 2 | 11 | 13 | 48 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 3.1 | 59.4 | 37.5 | | 0 | 15.4 | 84.6 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 6.2 | 0 | 6.2 | 2.1 | 39.6 | 25 | 66.7 | 0 | 4.2 | 22.9 | 27.1 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 3

Groups Printed- MU

| | Hamlet St From North | | | | 112th Pl From East | | | | Hamlet St From South | | | | 112th Pl From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 3 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 3 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 3 | 3 | 6 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 5 | 0 | 0 | 7 | 7 | 12 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 7 | 0 | 0 | 8 | 8 | 15 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 28.6 | 71.4 | | 0 | 0 | 100 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13.3 | 33.3 | 46.7 | 0 | 0 | 53.3 | 53.3 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/7/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Hamlet St Crossing North Leg | | | 112th Pl Crossing East Leg | | | Hamlet St Crossing South Leg | | | 112th Pl Crossing West Leg | | | |
|-------------|---------------------------------|------|------------|-------------------------------|------|------------|---------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 07:30 AM | 0 | 6 | 6 | 1 | 2 | 3 | 0 | 2 | 2 | 0 | 0 | 0 | 11 |
| 07:45 AM | 1 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Total | 1 | 29 | 30 | 1 | 2 | 3 | 0 | 2 | 2 | 0 | 0 | 0 | 35 |
| 08:00 AM | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:15 AM | 2 | 10 | 12 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| 08:30 AM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 7 |
| 08:45 AM | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Total | 2 | 32 | 34 | 1 | 3 | 4 | 0 | 2 | 2 | 0 | 0 | 0 | 40 |
| Grand Total | 3 | 61 | 64 | 2 | 5 | 7 | 0 | 4 | 4 | 0 | 0 | 0 | 75 |
| Apprch % | 4.7 | 95.3 | | 28.6 | 71.4 | | 0 | 100 | | 0 | 0 | | |
| Total % | 4 | 81.3 | 85.3 | 2.7 | 6.7 | 9.3 | 0 | 5.3 | 5.3 | 0 | 0 | 0 | |

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112th PI and Hamlet St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 5

Groups Printed- PC - SU - MU

| | Hamlet St From North | | | | 112th PI From East | | | | Hamlet St From South | | | | 112th PI From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 | 10 | 93 | 90 | 193 | 0 | 14 | 80 | 94 | 304 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 15 | 9 | 92 | 83 | 184 | 0 | 24 | 86 | 110 | 309 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 15 | 12 | 84 | 115 | 211 | 0 | 26 | 76 | 102 | 328 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 18 | 0 | 19 | 18 | 88 | 102 | 208 | 0 | 25 | 75 | 100 | 327 |
| Total | 0 | 0 | 0 | 0 | 1 | 65 | 0 | 66 | 49 | 357 | 390 | 796 | 0 | 89 | 317 | 406 | 1268 |
| 05:00 PM | 0 | 0 | 0 | 0 | 2 | 36 | 0 | 38 | 10 | 76 | 79 | 165 | 0 | 24 | 80 | 104 | 307 |
| 05:15 PM | 0 | 0 | 0 | 0 | 2 | 22 | 0 | 24 | 15 | 99 | 85 | 199 | 0 | 27 | 74 | 101 | 324 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 11 | 97 | 104 | 212 | 0 | 16 | 86 | 102 | 336 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 38 | 9 | 97 | 100 | 206 | 0 | 15 | 87 | 102 | 346 |
| Total | 0 | 0 | 0 | 0 | 4 | 118 | 0 | 122 | 45 | 369 | 368 | 782 | 0 | 82 | 327 | 409 | 1313 |
| Grand Total | 0 | 0 | 0 | 0 | 5 | 183 | 0 | 188 | 94 | 726 | 758 | 1578 | 0 | 171 | 644 | 815 | 2581 |
| Apprch % | 0 | 0 | 0 | | 2.7 | 97.3 | 0 | | 6 | 46 | 48 | | 0 | 21 | 79 | | |
| Total % | 0 | 0 | 0 | 0 | 0.2 | 7.1 | 0 | 7.3 | 3.6 | 28.1 | 29.4 | 61.1 | 0 | 6.6 | 25 | 31.6 | |
| PC | 0 | 0 | 0 | 0 | 5 | 181 | 0 | 186 | 93 | 719 | 750 | 1562 | 0 | 168 | 634 | 802 | 2550 |
| % PC | 0 | 0 | 0 | 0 | 100 | 98.9 | 0 | 98.9 | 98.9 | 99 | 98.9 | 99 | 0 | 98.2 | 98.4 | 98.4 | 98.8 |
| SU | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 4 | 5 | 10 | 0 | 3 | 9 | 12 | 24 |
| % SU | 0 | 0 | 0 | 0 | 0 | 1.1 | 0 | 1.1 | 1.1 | 0.6 | 0.7 | 0.6 | 0 | 1.8 | 1.4 | 1.5 | 0.9 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 6 | 0 | 0 | 1 | 1 | 7 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.4 | 0.4 | 0 | 0 | 0.2 | 0.1 | 0.3 |

| | Hamlet St From North | | | | 112th PI From East | | | | Hamlet St From South | | | | 112th PI From West | | | | |
|--|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 0 | 0 | 0 | 2 | 36 | 0 | 38 | 10 | 76 | 79 | 165 | 0 | 24 | 80 | 104 | 307 |
| 05:15 PM | 0 | 0 | 0 | 0 | 2 | 22 | 0 | 24 | 15 | 99 | 85 | 199 | 0 | 27 | 74 | 101 | 324 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 11 | 97 | 104 | 212 | 0 | 16 | 86 | 102 | 336 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 38 | 9 | 97 | 100 | 206 | 0 | 15 | 87 | 102 | 346 |
| Total Volume | 0 | 0 | 0 | 0 | 4 | 118 | 0 | 122 | 45 | 369 | 368 | 782 | 0 | 82 | 327 | 409 | 1313 |
| % App. Total | 0 | 0 | 0 | | 3.3 | 96.7 | 0 | | 5.8 | 47.2 | 47.1 | | 0 | 20 | 80 | | |
| PHF | .000 | .000 | .000 | .000 | .500 | .776 | .000 | .803 | .750 | .932 | .885 | .922 | .000 | .759 | .940 | .983 | .949 |

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112th Pl and Hamlet St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 6

Groups Printed- SU

| | Hamlet St From North | | | | 112th Pl From East | | | | Hamlet St From South | | | | 112th Pl From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 1 | 3 | 4 | 8 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 4 | 2 | 7 | 0 | 2 | 4 | 6 | 15 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 3 | 3 | 4 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 5 | 6 | 9 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 4 | 5 | 10 | 0 | 3 | 9 | 12 | 24 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 10 | 40 | 50 | | 0 | 25 | 75 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 8.3 | 0 | 8.3 | 4.2 | 16.7 | 20.8 | 41.7 | 0 | 12.5 | 37.5 | 50 | |

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112th Pl and Hamlet St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/7/2012

Page No : 7

Groups Printed- MU

| | Hamlet St From North | | | | 112th Pl From East | | | | Hamlet St From South | | | | 112th Pl From West | | | | |
|-------------|-------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 4 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 3 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 3 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 6 | 0 | 0 | 1 | 1 | 7 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | | 0 | 0 | 100 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42.9 | 42.9 | 85.7 | 0 | 0 | 14.3 | 14.3 | |

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112th Pl and Hamlet St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/7/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Hamlet St Crossing North Leg | | | 112th Pl Crossing East Leg | | | Hamlet St Crossing South Leg | | | 112th Pl Crossing West Leg | | | |
|-------------|---------------------------------|------|------------|-------------------------------|------|------------|---------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 3 | 3 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 6 |
| 04:30 PM | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 9 | 9 | 2 | 2 | 4 | 1 | 1 | 2 | 0 | 0 | 0 | 15 |
| 05:00 PM | 1 | 4 | 5 | 1 | 3 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 13 |
| 05:15 PM | 0 | 5 | 5 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 10 |
| 05:30 PM | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 5 |
| 05:45 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 1 | 13 | 14 | 2 | 8 | 10 | 0 | 6 | 6 | 0 | 0 | 0 | 30 |
| Grand Total | 1 | 22 | 23 | 4 | 10 | 14 | 1 | 7 | 8 | 0 | 0 | 0 | 45 |
| Apprch % | 4.3 | 95.7 | | 28.6 | 71.4 | | 12.5 | 87.5 | | 0 | 0 | | |
| Total % | 2.2 | 48.9 | 51.1 | 8.9 | 22.2 | 31.1 | 2.2 | 15.6 | 17.8 | 0 | 0 | 0 | |

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112th PI and Marshfield Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 29 | 37 | 0 | 66 | 0 | 83 | 4 | 87 | 0 | 0 | 0 | 0 | 37 | 108 | 0 | 145 | 298 |
| 07:15 AM | 48 | 35 | 1 | 84 | 0 | 99 | 5 | 104 | 0 | 0 | 0 | 0 | 63 | 108 | 0 | 171 | 359 |
| 07:30 AM | 65 | 51 | 1 | 117 | 0 | 148 | 8 | 156 | 0 | 0 | 0 | 0 | 81 | 109 | 0 | 190 | 463 |
| 07:45 AM | 47 | 54 | 0 | 101 | 0 | 136 | 4 | 140 | 0 | 0 | 0 | 0 | 82 | 135 | 0 | 217 | 458 |
| Total | 189 | 177 | 2 | 368 | 0 | 466 | 21 | 487 | 0 | 0 | 0 | 0 | 263 | 460 | 0 | 723 | 1578 |
| 08:00 AM | 40 | 54 | 1 | 95 | 0 | 149 | 10 | 159 | 0 | 0 | 0 | 0 | 67 | 91 | 0 | 158 | 412 |
| 08:15 AM | 41 | 56 | 2 | 99 | 0 | 153 | 12 | 165 | 0 | 0 | 0 | 0 | 97 | 107 | 0 | 204 | 468 |
| 08:30 AM | 38 | 60 | 1 | 99 | 0 | 126 | 7 | 133 | 0 | 0 | 0 | 0 | 80 | 101 | 0 | 181 | 413 |
| 08:45 AM | 37 | 66 | 3 | 106 | 0 | 152 | 14 | 166 | 0 | 0 | 0 | 0 | 74 | 94 | 0 | 168 | 440 |
| Total | 156 | 236 | 7 | 399 | 0 | 580 | 43 | 623 | 0 | 0 | 0 | 0 | 318 | 393 | 0 | 711 | 1733 |
| Grand Total | 345 | 413 | 9 | 767 | 0 | 1046 | 64 | 1110 | 0 | 0 | 0 | 0 | 581 | 853 | 0 | 1434 | 3311 |
| Apprch % | 45 | 53.8 | 1.2 | | 0 | 94.2 | 5.8 | | 0 | 0 | 0 | | 40.5 | 59.5 | 0 | | |
| Total % | 10.4 | 12.5 | 0.3 | 23.2 | 0 | 31.6 | 1.9 | 33.5 | 0 | 0 | 0 | 0 | 17.5 | 25.8 | 0 | 43.3 | |
| PC | 326 | 405 | 9 | 740 | 0 | 1023 | 62 | 1085 | 0 | 0 | 0 | 0 | 570 | 829 | 0 | 1399 | 3224 |
| % PC | 94.5 | 98.1 | 100 | 96.5 | 0 | 97.8 | 96.9 | 97.7 | 0 | 0 | 0 | 0 | 98.1 | 97.2 | 0 | 97.6 | 97.4 |
| SU | 14 | 5 | 0 | 19 | 0 | 21 | 2 | 23 | 0 | 0 | 0 | 0 | 9 | 16 | 0 | 25 | 67 |
| % SU | 4.1 | 1.2 | 0 | 2.5 | 0 | 2 | 3.1 | 2.1 | 0 | 0 | 0 | 0 | 1.5 | 1.9 | 0 | 1.7 | 2 |
| MU | 5 | 3 | 0 | 8 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 10 | 20 |
| % MU | 1.4 | 0.7 | 0 | 1 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.3 | 0.9 | 0 | 0.7 | 0.6 |

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|--|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 65 | 51 | 1 | 117 | 0 | 148 | 8 | 156 | 0 | 0 | 0 | 0 | 81 | 109 | 0 | 190 | 463 |
| 07:45 AM | 47 | 54 | 0 | 101 | 0 | 136 | 4 | 140 | 0 | 0 | 0 | 0 | 82 | 135 | 0 | 217 | 458 |
| 08:00 AM | 40 | 54 | 1 | 95 | 0 | 149 | 10 | 159 | 0 | 0 | 0 | 0 | 67 | 91 | 0 | 158 | 412 |
| 08:15 AM | 41 | 56 | 2 | 99 | 0 | 153 | 12 | 165 | 0 | 0 | 0 | 0 | 97 | 107 | 0 | 204 | 468 |
| Total Volume | 193 | 215 | 4 | 412 | 0 | 586 | 34 | 620 | 0 | 0 | 0 | 0 | 327 | 442 | 0 | 769 | 1801 |
| % App. Total | 46.8 | 52.2 | 1 | | 0 | 94.5 | 5.5 | | 0 | 0 | 0 | | 42.5 | 57.5 | 0 | | |
| PHF | .742 | .960 | .500 | .880 | .000 | .958 | .708 | .939 | .000 | .000 | .000 | .000 | .843 | .819 | .000 | .886 | .962 |

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112th PI and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 2

Groups Printed- SU

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 1 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 9 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 7 |
| 07:30 AM | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5 |
| 07:45 AM | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 10 |
| Total | 8 | 1 | 0 | 9 | 0 | 8 | 1 | 9 | 0 | 0 | 0 | 0 | 5 | 8 | 0 | 13 | 31 |
| 08:00 AM | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 08:15 AM | 2 | 0 | 0 | 2 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 8 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 9 |
| 08:45 AM | 3 | 3 | 0 | 6 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 14 |
| Total | 6 | 4 | 0 | 10 | 0 | 13 | 1 | 14 | 0 | 0 | 0 | 0 | 4 | 8 | 0 | 12 | 36 |
| Grand Total | 14 | 5 | 0 | 19 | 0 | 21 | 2 | 23 | 0 | 0 | 0 | 0 | 9 | 16 | 0 | 25 | 67 |
| Apprch % | 73.7 | 26.3 | 0 | | 0 | 91.3 | 8.7 | | 0 | 0 | 0 | | 36 | 64 | 0 | | |
| Total % | 20.9 | 7.5 | 0 | 28.4 | 0 | 31.3 | 3 | 34.3 | 0 | 0 | 0 | 0 | 13.4 | 23.9 | 0 | 37.3 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 3

Groups Printed- MU

| | Marshfield Ave From North | | | | 112th Pl From East | | | | Marshfield Ave From South | | | | 112th Pl From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 |
| 07:15 AM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 07:30 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| Total | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 6 | 10 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 08:15 AM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| Total | 2 | 2 | 0 | 4 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 10 |
| Grand Total | 5 | 3 | 0 | 8 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 10 | 20 |
| Apprch % | 62.5 | 37.5 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 20 | 80 | 0 | | |
| Total % | 25 | 15 | 0 | 40 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 40 | 0 | 50 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/6/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 112th PI Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 112th PI Crossing West Leg | | | Int. Total |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 1 | 1 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:15 AM | 1 | 5 | 6 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 07:30 AM | 1 | 12 | 13 | 7 | 0 | 7 | 0 | 1 | 1 | 0 | 0 | 0 | 21 |
| 07:45 AM | 0 | 5 | 5 | 4 | 0 | 4 | 0 | 2 | 2 | 0 | 0 | 0 | 11 |
| Total | 2 | 23 | 25 | 20 | 0 | 20 | 0 | 3 | 3 | 0 | 0 | 0 | 48 |
| 08:00 AM | 1 | 4 | 5 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| 08:15 AM | 2 | 1 | 3 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 08:30 AM | 1 | 6 | 7 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 08:45 AM | 3 | 10 | 13 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Total | 7 | 21 | 28 | 42 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 70 |
| Grand Total | 9 | 44 | 53 | 62 | 0 | 62 | 0 | 3 | 3 | 0 | 0 | 0 | 118 |
| Apprch % | 17 | 83 | | 100 | 0 | | 0 | 100 | | 0 | 0 | | |
| Total % | 7.6 | 37.3 | 44.9 | 52.5 | 0 | 52.5 | 0 | 2.5 | 2.5 | 0 | 0 | 0 | |

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112th PI and Marshfield Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 86 | 93 | 1 | 180 | 0 | 84 | 9 | 93 | 0 | 0 | 0 | 0 | 80 | 94 | 0 | 174 | 447 |
| 04:15 PM | 71 | 113 | 1 | 185 | 0 | 99 | 11 | 110 | 0 | 0 | 0 | 0 | 97 | 99 | 0 | 196 | 491 |
| 04:30 PM | 79 | 81 | 3 | 163 | 0 | 125 | 17 | 142 | 0 | 0 | 0 | 0 | 89 | 90 | 0 | 179 | 484 |
| 04:45 PM | 85 | 105 | 2 | 192 | 0 | 96 | 7 | 103 | 0 | 0 | 0 | 0 | 90 | 113 | 0 | 203 | 498 |
| Total | 321 | 392 | 7 | 720 | 0 | 404 | 44 | 448 | 0 | 0 | 0 | 0 | 356 | 396 | 0 | 752 | 1920 |
| 05:00 PM | 80 | 89 | 3 | 172 | 0 | 86 | 15 | 101 | 0 | 0 | 0 | 0 | 92 | 86 | 0 | 178 | 451 |
| 05:15 PM | 54 | 99 | 0 | 153 | 0 | 112 | 20 | 132 | 0 | 0 | 0 | 0 | 101 | 104 | 0 | 205 | 490 |
| 05:30 PM | 72 | 131 | 4 | 207 | 0 | 122 | 14 | 136 | 0 | 0 | 0 | 0 | 90 | 100 | 0 | 190 | 533 |
| 05:45 PM | 63 | 113 | 2 | 178 | 0 | 80 | 12 | 92 | 0 | 0 | 0 | 0 | 86 | 92 | 0 | 178 | 448 |
| Total | 269 | 432 | 9 | 710 | 0 | 400 | 61 | 461 | 0 | 0 | 0 | 0 | 369 | 382 | 0 | 751 | 1922 |
| Grand Total | 590 | 824 | 16 | 1430 | 0 | 804 | 105 | 909 | 0 | 0 | 0 | 0 | 725 | 778 | 0 | 1503 | 3842 |
| Apprch % | 41.3 | 57.6 | 1.1 | | 0 | 88.4 | 11.6 | | 0 | 0 | 0 | | 48.2 | 51.8 | 0 | | |
| Total % | 15.4 | 21.4 | 0.4 | 37.2 | 0 | 20.9 | 2.7 | 23.7 | 0 | 0 | 0 | 0 | 18.9 | 20.2 | 0 | 39.1 | |
| PC | 584 | 822 | 16 | 1422 | 0 | 802 | 104 | 906 | 0 | 0 | 0 | 0 | 714 | 768 | 0 | 1482 | 3810 |
| % PC | 99 | 99.8 | 100 | 99.4 | 0 | 99.8 | 99 | 99.7 | 0 | 0 | 0 | 0 | 98.5 | 98.7 | 0 | 98.6 | 99.2 |
| SU | 6 | 2 | 0 | 8 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 8 | 10 | 0 | 18 | 28 |
| % SU | 1 | 0.2 | 0 | 0.6 | 0 | 0.1 | 1 | 0.2 | 0 | 0 | 0 | 0 | 1.1 | 1.3 | 0 | 1.2 | 0.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0.2 | 0.1 |

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|--|------------------------------|------------|----------|------------|-----------------------|------------|-----------|------------|------------------------------|------|------|------------|-----------------------|------------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 85 | 105 | 2 | 192 | 0 | 96 | 7 | 103 | 0 | 0 | 0 | 0 | 90 | 113 | 0 | 203 | 498 |
| 05:00 PM | 80 | 89 | 3 | 172 | 0 | 86 | 15 | 101 | 0 | 0 | 0 | 0 | 92 | 86 | 0 | 178 | 451 |
| 05:15 PM | 54 | 99 | 0 | 153 | 0 | 112 | 20 | 132 | 0 | 0 | 0 | 0 | 101 | 104 | 0 | 205 | 490 |
| 05:30 PM | 72 | 131 | 4 | 207 | 0 | 122 | 14 | 136 | 0 | 0 | 0 | 0 | 90 | 100 | 0 | 190 | 533 |
| Total Volume | 291 | 424 | 9 | 724 | 0 | 416 | 56 | 472 | 0 | 0 | 0 | 0 | 373 | 403 | 0 | 776 | 1972 |
| % App. Total | 40.2 | 58.6 | 1.2 | | 0 | 88.1 | 11.9 | | 0 | 0 | 0 | | 48.1 | 51.9 | 0 | | |
| PHF | .856 | .809 | .563 | .874 | .000 | .852 | .700 | .868 | .000 | .000 | .000 | .000 | .923 | .892 | .000 | .946 | .925 |

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112th PI and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 6

Groups Printed- SU

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 7 |
| 04:15 PM | 2 | 1 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 6 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| Total | 5 | 1 | 0 | 6 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 8 | 16 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 5 | 5 |
| 05:15 PM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| Total | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 4 | 0 | 10 | 12 |
| Grand Total | 6 | 2 | 0 | 8 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 8 | 10 | 0 | 18 | 28 |
| Apprch % | 75 | 25 | 0 | | 0 | 50 | 50 | | 0 | 0 | 0 | | 44.4 | 55.6 | 0 | | |
| Total % | 21.4 | 7.1 | 0 | 28.6 | 0 | 3.6 | 3.6 | 7.1 | 0 | 0 | 0 | 0 | 28.6 | 35.7 | 0 | 64.3 | |

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112th PI and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 7

Groups Printed- MU

| | Marshfield Ave From North | | | | 112th PI From East | | | | Marshfield Ave From South | | | | 112th PI From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 3 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 100 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 75 | |

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112th PI and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/6/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 112th PI Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 112th PI Crossing West Leg | | | Int. Total |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 1 | 9 | 10 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 20 |
| 04:15 PM | 1 | 3 | 4 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 04:30 PM | 3 | 0 | 3 | 17 | 0 | 17 | 0 | 3 | 3 | 0 | 0 | 0 | 23 |
| 04:45 PM | 2 | 5 | 7 | 7 | 0 | 7 | 0 | 1 | 1 | 0 | 1 | 1 | 16 |
| Total | 7 | 17 | 24 | 43 | 0 | 43 | 0 | 5 | 5 | 0 | 1 | 1 | 73 |
| 05:00 PM | 3 | 3 | 6 | 15 | 0 | 15 | 0 | 2 | 2 | 0 | 0 | 0 | 23 |
| 05:15 PM | 0 | 1 | 1 | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| 05:30 PM | 4 | 2 | 6 | 14 | 0 | 14 | 0 | 5 | 5 | 0 | 0 | 0 | 25 |
| 05:45 PM | 2 | 2 | 4 | 12 | 0 | 12 | 0 | 1 | 1 | 0 | 3 | 3 | 20 |
| Total | 9 | 8 | 17 | 61 | 0 | 61 | 0 | 8 | 8 | 0 | 3 | 3 | 89 |
| Grand Total | 16 | 25 | 41 | 104 | 0 | 104 | 0 | 13 | 13 | 0 | 4 | 4 | 162 |
| Apprch % | 39 | 61 | | 100 | 0 | | 0 | 100 | | 0 | 100 | | |
| Total % | 9.9 | 15.4 | 25.3 | 64.2 | 0 | 64.2 | 0 | 8 | 8 | 0 | 2.5 | 2.5 | |

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773-283-2600 Fax: 773-283-2602

www.RWAengineers.com

115th St and Bishop Ford Fwy
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/6/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|-------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 48 | 0 | 0 | 48 | 0 | 101 | 9 | 110 | 0 | 0 | 0 | 0 | 39 | 22 | 0 | 61 | 219 |
| 07:15 AM | 47 | 0 | 1 | 48 | 0 | 115 | 2 | 117 | 0 | 0 | 0 | 0 | 42 | 43 | 0 | 85 | 250 |
| 07:30 AM | 48 | 0 | 2 | 50 | 0 | 117 | 9 | 126 | 0 | 0 | 0 | 0 | 55 | 44 | 0 | 99 | 275 |
| 07:45 AM | 56 | 0 | 0 | 56 | 0 | 155 | 7 | 162 | 0 | 0 | 0 | 0 | 51 | 49 | 0 | 100 | 318 |
| Total | 199 | 0 | 3 | 202 | 0 | 488 | 27 | 515 | 0 | 0 | 0 | 0 | 187 | 158 | 0 | 345 | 1062 |
| 08:00 AM | 48 | 0 | 0 | 48 | 0 | 112 | 4 | 116 | 0 | 0 | 0 | 0 | 37 | 49 | 0 | 86 | 250 |
| 08:15 AM | 44 | 0 | 1 | 45 | 0 | 123 | 3 | 126 | 0 | 0 | 0 | 0 | 39 | 34 | 0 | 73 | 244 |
| 08:30 AM | 52 | 0 | 0 | 52 | 0 | 115 | 6 | 121 | 0 | 0 | 0 | 0 | 54 | 38 | 0 | 92 | 265 |
| 08:45 AM | 57 | 0 | 0 | 57 | 0 | 93 | 2 | 95 | 0 | 0 | 0 | 0 | 45 | 40 | 0 | 85 | 237 |
| Total | 201 | 0 | 1 | 202 | 0 | 443 | 15 | 458 | 0 | 0 | 0 | 0 | 175 | 161 | 0 | 336 | 996 |
| Grand Total | 400 | 0 | 4 | 404 | 0 | 931 | 42 | 973 | 0 | 0 | 0 | 0 | 362 | 319 | 0 | 681 | 2058 |
| Apprch % | 99 | 0 | 1 | | 0 | 95.7 | 4.3 | | 0 | 0 | 0 | | 53.2 | 46.8 | 0 | | |
| Total % | 19.4 | 0 | 0.2 | 19.6 | 0 | 45.2 | 2 | 47.3 | 0 | 0 | 0 | 0 | 17.6 | 15.5 | 0 | 33.1 | |
| PC | 388 | 0 | 4 | 392 | 0 | 893 | 14 | 907 | 0 | 0 | 0 | 0 | 336 | 307 | 0 | 643 | 1942 |
| % PC | 97 | 0 | 100 | 97 | 0 | 95.9 | 33.3 | 93.2 | 0 | 0 | 0 | 0 | 92.8 | 96.2 | 0 | 94.4 | 94.4 |
| SU | 10 | 0 | 0 | 10 | 0 | 9 | 5 | 14 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 12 | 36 |
| % SU | 2.5 | 0 | 0 | 2.5 | 0 | 1 | 11.9 | 1.4 | 0 | 0 | 0 | 0 | 1.7 | 1.9 | 0 | 1.8 | 1.7 |
| MU | 2 | 0 | 0 | 2 | 0 | 29 | 23 | 52 | 0 | 0 | 0 | 0 | 20 | 6 | 0 | 26 | 80 |
| % MU | 0.5 | 0 | 0 | 0.5 | 0 | 3.1 | 54.8 | 5.3 | 0 | 0 | 0 | 0 | 5.5 | 1.9 | 0 | 3.8 | 3.9 |

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|--|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 47 | 0 | 1 | 48 | 0 | 115 | 2 | 117 | 0 | 0 | 0 | 0 | 42 | 43 | 0 | 85 | 250 |
| 07:30 AM | 48 | 0 | 2 | 50 | 0 | 117 | 9 | 126 | 0 | 0 | 0 | 0 | 55 | 44 | 0 | 99 | 275 |
| 07:45 AM | 56 | 0 | 0 | 56 | 0 | 155 | 7 | 162 | 0 | 0 | 0 | 0 | 51 | 49 | 0 | 100 | 318 |
| 08:00 AM | 48 | 0 | 0 | 48 | 0 | 112 | 4 | 116 | 0 | 0 | 0 | 0 | 37 | 49 | 0 | 86 | 250 |
| Total Volume | 199 | 0 | 3 | 202 | 0 | 499 | 22 | 521 | 0 | 0 | 0 | 0 | 185 | 185 | 0 | 370 | 1093 |
| % App. Total | 98.5 | 0 | 1.5 | | 0 | 95.8 | 4.2 | | 0 | 0 | 0 | | 50 | 50 | 0 | | |
| PHF | .888 | .000 | .375 | .902 | .000 | .805 | .611 | .804 | .000 | .000 | .000 | .000 | .841 | .944 | .000 | .925 | .859 |

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115th St and Bishop Ford Fwy

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 2

Groups Printed- SU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|-------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 3 | 0 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:30 AM | 2 | 0 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:45 AM | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 6 |
| Total | 8 | 0 | 0 | 8 | 0 | 4 | 3 | 7 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 19 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 |
| 08:15 AM | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 5 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 6 |
| Total | 2 | 0 | 0 | 2 | 0 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 8 | 17 |
| Grand Total | 10 | 0 | 0 | 10 | 0 | 9 | 5 | 14 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 12 | 36 |
| Apprch % | 100 | 0 | 0 | | 0 | 64.3 | 35.7 | | 0 | 0 | 0 | | 50 | 50 | 0 | | |
| Total % | 27.8 | 0 | 0 | 27.8 | 0 | 25 | 13.9 | 38.9 | 0 | 0 | 0 | 0 | 16.7 | 16.7 | 0 | 33.3 | |

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115th St and Bishop Ford Fwy

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 3

Groups Printed- MU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|-------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 9 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 15 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 9 |
| 07:45 AM | 2 | 0 | 0 | 2 | 0 | 6 | 5 | 11 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 15 |
| Total | 2 | 0 | 0 | 2 | 0 | 15 | 14 | 29 | 0 | 0 | 0 | 0 | 12 | 2 | 0 | 14 | 45 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 7 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 5 | 12 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 10 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 9 |
| Total | 0 | 0 | 0 | 0 | 0 | 14 | 9 | 23 | 0 | 0 | 0 | 0 | 8 | 4 | 0 | 12 | 35 |
| Grand Total | 2 | 0 | 0 | 2 | 0 | 29 | 23 | 52 | 0 | 0 | 0 | 0 | 20 | 6 | 0 | 26 | 80 |
| Apprch % | 100 | 0 | 0 | | 0 | 55.8 | 44.2 | | 0 | 0 | 0 | | 76.9 | 23.1 | 0 | | |
| Total % | 2.5 | 0 | 0 | 2.5 | 0 | 36.2 | 28.8 | 65 | 0 | 0 | 0 | 0 | 25 | 7.5 | 0 | 32.5 | |

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115th St and Bishop Ford Fwy

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 4

Groups Printed- PC - SU - MU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|-------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 40 | 2 | 0 | 42 | 0 | 56 | 19 | 75 | 0 | 0 | 0 | 0 | 80 | 43 | 0 | 123 | 240 |
| 04:15 PM | 49 | 7 | 4 | 60 | 0 | 59 | 18 | 77 | 0 | 0 | 0 | 0 | 116 | 54 | 0 | 170 | 307 |
| 04:30 PM | 66 | 1 | 3 | 70 | 0 | 65 | 8 | 73 | 0 | 0 | 0 | 0 | 140 | 44 | 0 | 184 | 327 |
| 04:45 PM | 46 | 1 | 6 | 53 | 0 | 81 | 8 | 89 | 0 | 0 | 0 | 0 | 83 | 53 | 0 | 136 | 278 |
| Total | 201 | 11 | 13 | 225 | 0 | 261 | 53 | 314 | 0 | 0 | 0 | 0 | 419 | 194 | 0 | 613 | 1152 |
| 05:00 PM | 49 | 0 | 0 | 49 | 0 | 88 | 12 | 100 | 0 | 0 | 0 | 0 | 159 | 45 | 0 | 204 | 353 |
| 05:15 PM | 46 | 1 | 4 | 51 | 0 | 73 | 7 | 80 | 0 | 0 | 0 | 0 | 129 | 53 | 0 | 182 | 313 |
| 05:30 PM | 52 | 3 | 3 | 58 | 0 | 73 | 2 | 75 | 0 | 0 | 0 | 0 | 128 | 53 | 0 | 181 | 314 |
| 05:45 PM | 73 | 2 | 8 | 83 | 0 | 77 | 4 | 81 | 0 | 0 | 0 | 0 | 126 | 52 | 0 | 178 | 342 |
| Total | 220 | 6 | 15 | 241 | 0 | 311 | 25 | 336 | 0 | 0 | 0 | 0 | 542 | 203 | 0 | 745 | 1322 |
| Grand Total | 421 | 17 | 28 | 466 | 0 | 572 | 78 | 650 | 0 | 0 | 0 | 0 | 961 | 397 | 0 | 1358 | 2474 |
| Apprch % | 90.3 | 3.6 | 6 | | 0 | 88 | 12 | | 0 | 0 | 0 | | 70.8 | 29.2 | 0 | | |
| Total % | 17 | 0.7 | 1.1 | 18.8 | 0 | 23.1 | 3.2 | 26.3 | 0 | 0 | 0 | 0 | 38.8 | 16 | 0 | 54.9 | |
| PC | 412 | 17 | 27 | 456 | 0 | 558 | 72 | 630 | 0 | 0 | 0 | 0 | 953 | 392 | 0 | 1345 | 2431 |
| % PC | 97.9 | 100 | 96.4 | 97.9 | 0 | 97.6 | 92.3 | 96.9 | 0 | 0 | 0 | 0 | 99.2 | 98.7 | 0 | 99 | 98.3 |
| SU | 7 | 0 | 1 | 8 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 8 | 22 |
| % SU | 1.7 | 0 | 3.6 | 1.7 | 0 | 0.9 | 1.3 | 0.9 | 0 | 0 | 0 | 0 | 0.5 | 0.8 | 0 | 0.6 | 0.9 |
| MU | 2 | 0 | 0 | 2 | 0 | 9 | 5 | 14 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 21 |
| % MU | 0.5 | 0 | 0 | 0.4 | 0 | 1.6 | 6.4 | 2.2 | 0 | 0 | 0 | 0 | 0.3 | 0.5 | 0 | 0.4 | 0.8 |

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|--|-------------------------------|----------|----------|------------|-----------------------|-----------|-----------|------------|-------------------------------|------|------|------------|-----------------------|-----------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 49 | 0 | 0 | 49 | 0 | 88 | 12 | 100 | 0 | 0 | 0 | 0 | 159 | 45 | 0 | 204 | 353 |
| 05:15 PM | 46 | 1 | 4 | 51 | 0 | 73 | 7 | 80 | 0 | 0 | 0 | 0 | 129 | 53 | 0 | 182 | 313 |
| 05:30 PM | 52 | 3 | 3 | 58 | 0 | 73 | 2 | 75 | 0 | 0 | 0 | 0 | 128 | 53 | 0 | 181 | 314 |
| 05:45 PM | 73 | 2 | 8 | 83 | 0 | 77 | 4 | 81 | 0 | 0 | 0 | 0 | 126 | 52 | 0 | 178 | 342 |
| Total Volume | 220 | 6 | 15 | 241 | 0 | 311 | 25 | 336 | 0 | 0 | 0 | 0 | 542 | 203 | 0 | 745 | 1322 |
| % App. Total | 91.3 | 2.5 | 6.2 | | 0 | 92.6 | 7.4 | | 0 | 0 | 0 | | 72.8 | 27.2 | 0 | | |
| PHF | .753 | .500 | .469 | .726 | .000 | .884 | .521 | .840 | .000 | .000 | .000 | .000 | .852 | .958 | .000 | .913 | .936 |

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115th St and Bishop Ford Fwy

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 5

Groups Printed- SU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|-------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 3 |
| 04:30 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 3 | 0 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6 |
| Total | 5 | 0 | 1 | 6 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 5 | 14 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 3 |
| 05:30 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 2 | 0 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 8 |
| Grand Total | 7 | 0 | 1 | 8 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 8 | 22 |
| Apprch % | 87.5 | 0 | 12.5 | | 0 | 83.3 | 16.7 | | 0 | 0 | 0 | | 62.5 | 37.5 | 0 | | |
| Total % | 31.8 | 0 | 4.5 | 36.4 | 0 | 22.7 | 4.5 | 27.3 | 0 | 0 | 0 | 0 | 22.7 | 13.6 | 0 | 36.4 | |

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115th St and Bishop Ford Fwy

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/6/2012

Page No : 6

Groups Printed- MU

| | Bishop Ford Fwy From North | | | | 115th St From East | | | | Bishop Ford Fwy From South | | | | 115th St From West | | | | |
|---------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 4 |
| Total | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 13 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 16 |
| 05:00 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 05:45 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 5 |
| Grand Total | 2 | 0 | 0 | 2 | 0 | 9 | 5 | 14 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 21 |
| Apprch % | 100 | 0 | 0 | | 0 | 64.3 | 35.7 | | 0 | 0 | 0 | | 60 | 40 | 0 | | |
| Total % | 9.5 | 0 | 0 | 9.5 | 0 | 42.9 | 23.8 | 66.7 | 0 | 0 | 0 | 0 | 14.3 | 9.5 | 0 | 23.8 | |

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115th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 15 | 1 | 7 | 23 | 6 | 82 | 16 | 104 | 1 | 0 | 0 | 1 | 2 | 57 | 6 | 65 | 193 |
| 07:15 AM | 11 | 0 | 3 | 14 | 19 | 124 | 19 | 162 | 0 | 0 | 0 | 0 | 1 | 84 | 19 | 104 | 280 |
| 07:30 AM | 14 | 1 | 7 | 22 | 14 | 92 | 16 | 122 | 1 | 0 | 0 | 1 | 1 | 96 | 13 | 110 | 255 |
| 07:45 AM | 25 | 1 | 13 | 39 | 20 | 138 | 15 | 173 | 0 | 0 | 0 | 0 | 0 | 112 | 20 | 132 | 344 |
| Total | 65 | 3 | 30 | 98 | 59 | 436 | 66 | 561 | 2 | 0 | 0 | 2 | 4 | 349 | 58 | 411 | 1072 |
| 08:00 AM | 15 | 0 | 10 | 25 | 15 | 141 | 9 | 165 | 0 | 0 | 0 | 0 | 1 | 99 | 20 | 120 | 310 |
| 08:15 AM | 11 | 1 | 8 | 20 | 22 | 116 | 7 | 145 | 0 | 0 | 0 | 0 | 0 | 81 | 16 | 97 | 262 |
| 08:30 AM | 12 | 0 | 6 | 18 | 29 | 143 | 2 | 174 | 0 | 0 | 1 | 1 | 0 | 77 | 14 | 91 | 284 |
| 08:45 AM | 28 | 0 | 14 | 42 | 15 | 122 | 1 | 138 | 0 | 0 | 0 | 0 | 0 | 87 | 21 | 108 | 288 |
| Total | 66 | 1 | 38 | 105 | 81 | 522 | 19 | 622 | 0 | 0 | 1 | 1 | 1 | 344 | 71 | 416 | 1144 |
| Grand Total | 131 | 4 | 68 | 203 | 140 | 958 | 85 | 1183 | 2 | 0 | 1 | 3 | 5 | 693 | 129 | 827 | 2216 |
| Apprch % | 64.5 | 2 | 33.5 | | 11.8 | 81 | 7.2 | | 66.7 | 0 | 33.3 | | 0.6 | 83.8 | 15.6 | | |
| Total % | 5.9 | 0.2 | 3.1 | 9.2 | 6.3 | 43.2 | 3.8 | 53.4 | 0.1 | 0 | 0 | 0.1 | 0.2 | 31.3 | 5.8 | 37.3 | |
| PC | 117 | 4 | 64 | 185 | 139 | 923 | 85 | 1147 | 2 | 0 | 1 | 3 | 5 | 672 | 124 | 801 | 2136 |
| % PC | 89.3 | 100 | 94.1 | 91.1 | 99.3 | 96.3 | 100 | 97 | 100 | 0 | 100 | 100 | 100 | 97 | 96.1 | 96.9 | 96.4 |
| SU | 14 | 0 | 2 | 16 | 1 | 30 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 21 | 5 | 26 | 73 |
| % SU | 10.7 | 0 | 2.9 | 7.9 | 0.7 | 3.1 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 3 | 3.9 | 3.1 | 3.3 |
| MU | 0 | 0 | 2 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| % MU | 0 | 0 | 2.9 | 1 | 0 | 0.5 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 |

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 25 | 1 | 13 | 39 | 20 | 138 | 15 | 173 | 0 | 0 | 0 | 0 | 0 | 112 | 20 | 132 | 344 |
| 08:00 AM | 15 | 0 | 10 | 25 | 15 | 141 | 9 | 165 | 0 | 0 | 0 | 0 | 1 | 99 | 20 | 120 | 310 |
| 08:15 AM | 11 | 1 | 8 | 20 | 22 | 116 | 7 | 145 | 0 | 0 | 0 | 0 | 0 | 81 | 16 | 97 | 262 |
| 08:30 AM | 12 | 0 | 6 | 18 | 29 | 143 | 2 | 174 | 0 | 0 | 1 | 1 | 0 | 77 | 14 | 91 | 284 |
| Total Volume | 63 | 2 | 37 | 102 | 86 | 538 | 33 | 657 | 0 | 0 | 1 | 1 | 1 | 369 | 70 | 440 | 1200 |
| % App. Total | 61.8 | 2 | 36.3 | | 13.1 | 81.9 | 5 | | 0 | 0 | 100 | | 0.2 | 83.9 | 15.9 | | |
| PHF | .630 | .500 | .712 | .654 | .741 | .941 | .550 | .944 | .000 | .000 | .250 | .250 | .250 | .824 | .875 | .833 | .872 |

Regina Webster & Associates, Inc.

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773-283-2600 Fax: 773-283-2602

www.RWAengineers.com

115th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 2

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 0 | 1 | 2 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 7 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 9 |
| 07:30 AM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 6 |
| 07:45 AM | 2 | 0 | 1 | 3 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 12 |
| Total | 4 | 0 | 2 | 6 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 11 | 34 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 08:15 AM | 3 | 0 | 0 | 3 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 7 | 14 |
| 08:30 AM | 2 | 0 | 0 | 2 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 9 |
| 08:45 AM | 4 | 0 | 0 | 4 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 11 |
| Total | 10 | 0 | 0 | 10 | 1 | 13 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 12 | 3 | 15 | 39 |
| Grand Total | 14 | 0 | 2 | 16 | 1 | 30 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 21 | 5 | 26 | 73 |
| Apprch % | 87.5 | 0 | 12.5 | | 3.2 | 96.8 | 0 | | 0 | 0 | 0 | | 0 | 80.8 | 19.2 | | |
| Total % | 19.2 | 0 | 2.7 | 21.9 | 1.4 | 41.1 | 0 | 42.5 | 0 | 0 | 0 | 0 | 0 | 28.8 | 6.8 | 35.6 | |

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7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 3

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 0 | 1 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 2 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Apprch % | 0 | 0 | 100 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 28.6 | 28.6 | 0 | 71.4 | 0 | 71.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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115th St and Cottage Grove Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 115th St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 15 |
| 07:15 AM | 0 | 10 | 10 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 5 | 5 | 20 |
| 07:30 AM | 0 | 5 | 5 | 0 | 8 | 8 | 0 | 9 | 9 | 0 | 9 | 9 | 31 |
| 07:45 AM | 0 | 7 | 7 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 10 | 10 | 19 |
| Total | 0 | 30 | 30 | 0 | 12 | 12 | 1 | 11 | 12 | 0 | 31 | 31 | 85 |
| 08:00 AM | 0 | 15 | 15 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 4 | 4 | 27 |
| 08:15 AM | 1 | 6 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 13 |
| 08:30 AM | 0 | 9 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 08:45 AM | 0 | 5 | 5 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 13 |
| Total | 1 | 35 | 36 | 0 | 9 | 9 | 0 | 4 | 4 | 0 | 14 | 14 | 63 |
| Grand Total | 1 | 65 | 66 | 0 | 21 | 21 | 1 | 15 | 16 | 0 | 45 | 45 | 148 |
| Apprch % | 1.5 | 98.5 | | 0 | 100 | | 6.2 | 93.8 | | 0 | 100 | | |
| Total % | 0.7 | 43.9 | 44.6 | 0 | 14.2 | 14.2 | 0.7 | 10.1 | 10.8 | 0 | 30.4 | 30.4 | |

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115th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 5

Groups Printed- PC - SU - MU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 22 | 0 | 18 | 40 | 15 | 96 | 0 | 111 | 1 | 0 | 0 | 1 | 1 | 94 | 11 | 106 | 258 |
| 04:15 PM | 19 | 0 | 31 | 50 | 10 | 133 | 0 | 143 | 3 | 0 | 0 | 3 | 0 | 95 | 10 | 105 | 301 |
| 04:30 PM | 26 | 0 | 17 | 43 | 10 | 139 | 0 | 149 | 11 | 0 | 0 | 11 | 0 | 113 | 12 | 125 | 328 |
| 04:45 PM | 36 | 0 | 44 | 80 | 10 | 171 | 0 | 181 | 2 | 0 | 2 | 4 | 0 | 126 | 11 | 137 | 402 |
| Total | 103 | 0 | 110 | 213 | 45 | 539 | 0 | 584 | 17 | 0 | 2 | 19 | 1 | 428 | 44 | 473 | 1289 |
| 05:00 PM | 20 | 0 | 37 | 57 | 6 | 128 | 0 | 134 | 21 | 0 | 2 | 23 | 0 | 108 | 6 | 114 | 328 |
| 05:15 PM | 38 | 0 | 44 | 82 | 12 | 166 | 2 | 180 | 14 | 0 | 2 | 16 | 0 | 105 | 13 | 118 | 396 |
| 05:30 PM | 21 | 0 | 37 | 58 | 9 | 178 | 0 | 187 | 9 | 0 | 0 | 9 | 0 | 105 | 10 | 115 | 369 |
| 05:45 PM | 24 | 0 | 38 | 62 | 7 | 188 | 0 | 195 | 9 | 2 | 1 | 12 | 0 | 144 | 8 | 152 | 421 |
| Total | 103 | 0 | 156 | 259 | 34 | 660 | 2 | 696 | 53 | 2 | 5 | 60 | 0 | 462 | 37 | 499 | 1514 |
| Grand Total | 206 | 0 | 266 | 472 | 79 | 1199 | 2 | 1280 | 70 | 2 | 7 | 79 | 1 | 890 | 81 | 972 | 2803 |
| Apprch % | 43.6 | 0 | 56.4 | | 6.2 | 93.7 | 0.2 | | 88.6 | 2.5 | 8.9 | | 0.1 | 91.6 | 8.3 | | |
| Total % | 7.3 | 0 | 9.5 | 16.8 | 2.8 | 42.8 | 0.1 | 45.7 | 2.5 | 0.1 | 0.2 | 2.8 | 0 | 31.8 | 2.9 | 34.7 | |
| PC | 191 | 0 | 262 | 453 | 78 | 1188 | 2 | 1268 | 70 | 2 | 6 | 78 | 1 | 877 | 81 | 959 | 2758 |
| % PC | 92.7 | 0 | 98.5 | 96 | 98.7 | 99.1 | 100 | 99.1 | 100 | 100 | 85.7 | 98.7 | 100 | 98.5 | 100 | 98.7 | 98.4 |
| SU | 15 | 0 | 3 | 18 | 0 | 10 | 0 | 10 | 0 | 0 | 1 | 1 | 0 | 12 | 0 | 12 | 41 |
| % SU | 7.3 | 0 | 1.1 | 3.8 | 0 | 0.8 | 0 | 0.8 | 0 | 0 | 14.3 | 1.3 | 0 | 1.3 | 0 | 1.2 | 1.5 |
| MU | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| % MU | 0 | 0 | 0.4 | 0.2 | 1.3 | 0.1 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0.1 |

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|--|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 20 | 0 | 37 | 57 | 6 | 128 | 0 | 134 | 21 | 0 | 2 | 23 | 0 | 108 | 6 | 114 | 328 |
| 05:15 PM | 38 | 0 | 44 | 82 | 12 | 166 | 2 | 180 | 14 | 0 | 2 | 16 | 0 | 105 | 13 | 118 | 396 |
| 05:30 PM | 21 | 0 | 37 | 58 | 9 | 178 | 0 | 187 | 9 | 0 | 0 | 9 | 0 | 105 | 10 | 115 | 369 |
| 05:45 PM | 24 | 0 | 38 | 62 | 7 | 188 | 0 | 195 | 9 | 2 | 1 | 12 | 0 | 144 | 8 | 152 | 421 |
| Total Volume | 103 | 0 | 156 | 259 | 34 | 660 | 2 | 696 | 53 | 2 | 5 | 60 | 0 | 462 | 37 | 499 | 1514 |
| % App. Total | 39.8 | 0 | 60.2 | | 4.9 | 94.8 | 0.3 | | 88.3 | 3.3 | 8.3 | | 0 | 92.6 | 7.4 | | |
| PHF | .678 | .000 | .886 | .790 | .708 | .878 | .250 | .892 | .631 | .250 | .625 | .652 | .000 | .802 | .712 | .821 | .899 |

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115th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 6

Groups Printed- SU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 3 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 04:15 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 04:30 PM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 8 |
| 04:45 PM | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| Total | 8 | 0 | 3 | 11 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 21 |
| 05:00 PM | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 6 |
| 05:15 PM | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 6 |
| 05:30 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:45 PM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| Total | 7 | 0 | 0 | 7 | 0 | 6 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 6 | 0 | 6 | 20 |
| Grand Total | 15 | 0 | 3 | 18 | 0 | 10 | 0 | 10 | 0 | 0 | 1 | 1 | 0 | 12 | 0 | 12 | 41 |
| Apprch % | 83.3 | 0 | 16.7 | | 0 | 100 | 0 | | 0 | 0 | 100 | | 0 | 100 | 0 | | |
| Total % | 36.6 | 0 | 7.3 | 43.9 | 0 | 24.4 | 0 | 24.4 | 0 | 0 | 2.4 | 2.4 | 0 | 29.3 | 0 | 29.3 | |

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115th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 7

Groups Printed- MU

| | Cottage Grove Ave From North | | | | 115th St From East | | | | Cottage Grove Ave From South | | | | 115th St From West | | | | |
|-------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 05:00 PM | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| Apprch % | 0 | 0 | 100 | | 50 | 50 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 25 | 25 | 25 | 25 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 | |

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115th St and Cottage Grove Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Cottage Grove Ave Crossing North Leg | | | 115th St Crossing East Leg | | | Cottage Grove Ave Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:15 PM | 0 | 10 | 10 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 11 |
| 04:30 PM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 4 | 4 | 19 |
| 04:45 PM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 22 | 22 | 0 | 1 | 1 | 0 | 11 | 11 | 0 | 4 | 4 | 38 |
| 05:00 PM | 0 | 17 | 17 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 5 | 5 | 37 |
| 05:15 PM | 0 | 8 | 8 | 0 | 1 | 1 | 0 | 11 | 11 | 0 | 2 | 2 | 22 |
| 05:30 PM | 1 | 18 | 19 | 0 | 0 | 0 | 0 | 9 | 9 | 0 | 4 | 4 | 32 |
| 05:45 PM | 0 | 17 | 17 | 0 | 9 | 9 | 0 | 9 | 9 | 0 | 3 | 3 | 38 |
| Total | 1 | 60 | 61 | 0 | 10 | 10 | 0 | 44 | 44 | 0 | 14 | 14 | 129 |
| Grand Total | 1 | 82 | 83 | 0 | 11 | 11 | 0 | 55 | 55 | 0 | 18 | 18 | 167 |
| Apprch % | 1.2 | 98.8 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0.6 | 49.1 | 49.7 | 0 | 6.6 | 6.6 | 0 | 32.9 | 32.9 | 0 | 10.8 | 10.8 | |

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115th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 11 | 59 | 5 | 75 | 17 | 30 | 8 | 55 | 9 | 185 | 7 | 201 | 7 | 46 | 21 | 74 | 405 |
| 07:15 AM | 21 | 62 | 8 | 91 | 24 | 52 | 8 | 84 | 7 | 201 | 9 | 217 | 4 | 38 | 30 | 72 | 464 |
| 07:30 AM | 15 | 77 | 14 | 106 | 15 | 48 | 11 | 74 | 10 | 189 | 19 | 218 | 6 | 44 | 42 | 92 | 490 |
| 07:45 AM | 24 | 76 | 20 | 120 | 18 | 44 | 14 | 76 | 15 | 246 | 8 | 269 | 14 | 55 | 55 | 124 | 589 |
| Total | 71 | 274 | 47 | 392 | 74 | 174 | 41 | 289 | 41 | 821 | 43 | 905 | 31 | 183 | 148 | 362 | 1948 |
| 08:00 AM | 10 | 104 | 16 | 130 | 15 | 54 | 12 | 81 | 9 | 184 | 14 | 207 | 11 | 44 | 30 | 85 | 503 |
| 08:15 AM | 21 | 116 | 16 | 153 | 14 | 30 | 13 | 57 | 24 | 209 | 18 | 251 | 8 | 59 | 42 | 109 | 570 |
| 08:30 AM | 18 | 96 | 18 | 132 | 26 | 41 | 12 | 79 | 16 | 172 | 9 | 197 | 11 | 47 | 30 | 88 | 496 |
| 08:45 AM | 25 | 81 | 18 | 124 | 13 | 44 | 12 | 69 | 16 | 161 | 19 | 196 | 21 | 40 | 37 | 98 | 487 |
| Total | 74 | 397 | 68 | 539 | 68 | 169 | 49 | 286 | 65 | 726 | 60 | 851 | 51 | 190 | 139 | 380 | 2056 |
| Grand Total | 145 | 671 | 115 | 931 | 142 | 343 | 90 | 575 | 106 | 1547 | 103 | 1756 | 82 | 373 | 287 | 742 | 4004 |
| Apprch % | 15.6 | 72.1 | 12.4 | | 24.7 | 59.7 | 15.7 | | 6 | 88.1 | 5.9 | | 11.1 | 50.3 | 38.7 | | |
| Total % | 3.6 | 16.8 | 2.9 | 23.3 | 3.5 | 8.6 | 2.2 | 14.4 | 2.6 | 38.6 | 2.6 | 43.9 | 2 | 9.3 | 7.2 | 18.5 | |
| PC | 139 | 619 | 112 | 870 | 135 | 323 | 89 | 547 | 104 | 1471 | 100 | 1675 | 80 | 355 | 282 | 717 | 3809 |
| % PC | 95.9 | 92.3 | 97.4 | 93.4 | 95.1 | 94.2 | 98.9 | 95.1 | 98.1 | 95.1 | 97.1 | 95.4 | 97.6 | 95.2 | 98.3 | 96.6 | 95.1 |
| SU | 6 | 48 | 3 | 57 | 7 | 20 | 1 | 28 | 2 | 64 | 3 | 69 | 2 | 18 | 4 | 24 | 178 |
| % SU | 4.1 | 7.2 | 2.6 | 6.1 | 4.9 | 5.8 | 1.1 | 4.9 | 1.9 | 4.1 | 2.9 | 3.9 | 2.4 | 4.8 | 1.4 | 3.2 | 4.4 |
| MU | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 0 | 0 | 1 | 1 | 17 |
| % MU | 0 | 0.6 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 | 0.7 | 0 | 0 | 0.3 | 0.1 | 0.4 |

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 24 | 76 | 20 | 120 | 18 | 44 | 14 | 76 | 15 | 246 | 8 | 269 | 14 | 55 | 55 | 124 | 589 |
| 08:00 AM | 10 | 104 | 16 | 130 | 15 | 54 | 12 | 81 | 9 | 184 | 14 | 207 | 11 | 44 | 30 | 85 | 503 |
| 08:15 AM | 21 | 116 | 16 | 153 | 14 | 30 | 13 | 57 | 24 | 209 | 18 | 251 | 8 | 59 | 42 | 109 | 570 |
| 08:30 AM | 18 | 96 | 18 | 132 | 26 | 41 | 12 | 79 | 16 | 172 | 9 | 197 | 11 | 47 | 30 | 88 | 496 |
| Total Volume | 73 | 392 | 70 | 535 | 73 | 169 | 51 | 293 | 64 | 811 | 49 | 924 | 44 | 205 | 157 | 406 | 2158 |
| % App. Total | 13.6 | 73.3 | 13.1 | | 24.9 | 57.7 | 17.4 | | 6.9 | 87.8 | 5.3 | | 10.8 | 50.5 | 38.7 | | |
| PHF | .760 | .845 | .875 | .874 | .702 | .782 | .911 | .904 | .667 | .824 | .681 | .859 | .786 | .869 | .714 | .819 | .916 |

Regina Webster & Associates, Inc.

8619 West Bryn Mawr Avenue, Suite 602, Chicago, Illinois 60631

773-283-2600 Fax: 773-283-2602

www.RWAengineers.com

115th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 2

Groups Printed- SU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 5 | 0 | 5 | 2 | 4 | 0 | 6 | 0 | 11 | 0 | 11 | 1 | 3 | 0 | 4 | 26 |
| 07:15 AM | 0 | 8 | 0 | 8 | 0 | 3 | 1 | 4 | 0 | 3 | 1 | 4 | 0 | 2 | 0 | 2 | 18 |
| 07:30 AM | 1 | 4 | 1 | 6 | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 4 | 2 | 6 | 17 |
| 07:45 AM | 1 | 6 | 0 | 7 | 0 | 2 | 0 | 2 | 0 | 10 | 1 | 11 | 0 | 2 | 1 | 3 | 23 |
| Total | 2 | 23 | 1 | 26 | 2 | 11 | 1 | 14 | 0 | 27 | 2 | 29 | 1 | 11 | 3 | 15 | 84 |
| 08:00 AM | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 0 | 11 | 1 | 12 | 0 | 1 | 0 | 1 | 20 |
| 08:15 AM | 1 | 7 | 1 | 9 | 1 | 1 | 0 | 2 | 0 | 10 | 0 | 10 | 0 | 1 | 1 | 2 | 23 |
| 08:30 AM | 3 | 8 | 1 | 12 | 3 | 2 | 0 | 5 | 2 | 7 | 0 | 9 | 0 | 3 | 0 | 3 | 29 |
| 08:45 AM | 0 | 8 | 0 | 8 | 1 | 1 | 0 | 2 | 0 | 9 | 0 | 9 | 1 | 2 | 0 | 3 | 22 |
| Total | 4 | 25 | 2 | 31 | 5 | 9 | 0 | 14 | 2 | 37 | 1 | 40 | 1 | 7 | 1 | 9 | 94 |
| Grand Total | 6 | 48 | 3 | 57 | 7 | 20 | 1 | 28 | 2 | 64 | 3 | 69 | 2 | 18 | 4 | 24 | 178 |
| Apprch % | 10.5 | 84.2 | 5.3 | | 25 | 71.4 | 3.6 | | 2.9 | 92.8 | 4.3 | | 8.3 | 75 | 16.7 | | |
| Total % | 3.4 | 27 | 1.7 | 32 | 3.9 | 11.2 | 0.6 | 15.7 | 1.1 | 36 | 1.7 | 38.8 | 1.1 | 10.1 | 2.2 | 13.5 | |

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115th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 3

Groups Printed- MU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 4 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 1 | 1 | 10 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 7 |
| Grand Total | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 0 | 0 | 1 | 1 | 17 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 100 | | |
| Total % | 0 | 23.5 | 0 | 23.5 | 0 | 0 | 0 | 0 | 0 | 70.6 | 0 | 70.6 | 0 | 0 | 5.9 | 5.9 | |

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115th St and Halsted St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 115th St Crossing East Leg | | | Halsted St Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 1 | 7 | 8 | 0 | 7 | 7 | 0 | 3 | 3 | 0 | 8 | 8 | 26 |
| 07:15 AM | 0 | 9 | 9 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 12 | 12 | 26 |
| 07:30 AM | 0 | 7 | 7 | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 9 | 9 | 22 |
| 07:45 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 9 | 9 | 13 |
| Total | 1 | 26 | 27 | 0 | 15 | 15 | 0 | 7 | 7 | 0 | 38 | 38 | 87 |
| 08:00 AM | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 2 | 2 | 0 | 7 | 7 | 16 |
| 08:15 AM | 0 | 20 | 20 | 1 | 2 | 3 | 0 | 2 | 2 | 0 | 12 | 12 | 37 |
| 08:30 AM | 0 | 13 | 13 | 0 | 8 | 8 | 0 | 4 | 4 | 0 | 9 | 9 | 34 |
| 08:45 AM | 0 | 13 | 13 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 13 | 13 | 29 |
| Total | 0 | 47 | 47 | 1 | 17 | 18 | 0 | 10 | 10 | 0 | 41 | 41 | 116 |
| Grand Total | 1 | 73 | 74 | 1 | 32 | 33 | 0 | 17 | 17 | 0 | 79 | 79 | 203 |
| Apprch % | 1.4 | 98.6 | | 3 | 97 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0.5 | 36 | 36.5 | 0.5 | 15.8 | 16.3 | 0 | 8.4 | 8.4 | 0 | 38.9 | 38.9 | |

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115th St and Halsted St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/9/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 32 | 170 | 22 | 224 | 14 | 53 | 27 | 94 | 12 | 109 | 19 | 140 | 15 | 51 | 22 | 88 | 546 |
| 04:15 PM | 24 | 143 | 29 | 196 | 11 | 52 | 24 | 87 | 20 | 122 | 21 | 163 | 27 | 59 | 19 | 105 | 551 |
| 04:30 PM | 37 | 166 | 15 | 218 | 26 | 64 | 28 | 118 | 17 | 98 | 21 | 136 | 26 | 60 | 30 | 116 | 588 |
| 04:45 PM | 32 | 163 | 28 | 223 | 16 | 55 | 31 | 102 | 13 | 118 | 32 | 163 | 35 | 34 | 23 | 92 | 580 |
| Total | 125 | 642 | 94 | 861 | 67 | 224 | 110 | 401 | 62 | 447 | 93 | 602 | 103 | 204 | 94 | 401 | 2265 |
| 05:00 PM | 24 | 166 | 13 | 203 | 20 | 72 | 41 | 133 | 13 | 102 | 23 | 138 | 21 | 56 | 22 | 99 | 573 |
| 05:15 PM | 36 | 190 | 18 | 244 | 16 | 77 | 36 | 129 | 12 | 100 | 20 | 132 | 23 | 43 | 30 | 96 | 601 |
| 05:30 PM | 25 | 201 | 20 | 246 | 18 | 77 | 37 | 132 | 12 | 116 | 25 | 153 | 27 | 51 | 34 | 112 | 643 |
| 05:45 PM | 32 | 195 | 25 | 252 | 11 | 85 | 45 | 141 | 15 | 97 | 28 | 140 | 17 | 51 | 20 | 88 | 621 |
| Total | 117 | 752 | 76 | 945 | 65 | 311 | 159 | 535 | 52 | 415 | 96 | 563 | 88 | 201 | 106 | 395 | 2438 |
| Grand Total | 242 | 1394 | 170 | 1806 | 132 | 535 | 269 | 936 | 114 | 862 | 189 | 1165 | 191 | 405 | 200 | 796 | 4703 |
| Apprch % | 13.4 | 77.2 | 9.4 | | 14.1 | 57.2 | 28.7 | | 9.8 | 74 | 16.2 | | 24 | 50.9 | 25.1 | | |
| Total % | 5.1 | 29.6 | 3.6 | 38.4 | 2.8 | 11.4 | 5.7 | 19.9 | 2.4 | 18.3 | 4 | 24.8 | 4.1 | 8.6 | 4.3 | 16.9 | |
| PC | 240 | 1347 | 166 | 1753 | 130 | 521 | 267 | 918 | 112 | 823 | 184 | 1119 | 188 | 395 | 198 | 781 | 4571 |
| % PC | 99.2 | 96.6 | 97.6 | 97.1 | 98.5 | 97.4 | 99.3 | 98.1 | 98.2 | 95.5 | 97.4 | 96.1 | 98.4 | 97.5 | 99 | 98.1 | 97.2 |
| SU | 2 | 45 | 3 | 50 | 2 | 14 | 2 | 18 | 2 | 37 | 5 | 44 | 2 | 10 | 2 | 14 | 126 |
| % SU | 0.8 | 3.2 | 1.8 | 2.8 | 1.5 | 2.6 | 0.7 | 1.9 | 1.8 | 4.3 | 2.6 | 3.8 | 1 | 2.5 | 1 | 1.8 | 2.7 |
| MU | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 6 |
| % MU | 0 | 0.1 | 0.6 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0.5 | 0 | 0 | 0.1 | 0.1 |

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|--|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|--------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 24 | 166 | 13 | 203 | 20 | 72 | 41 | 133 | 13 | 102 | 23 | 138 | 21 | 56 | 22 | 99 | 573 |
| 05:15 PM | 36 | 190 | 18 | 244 | 16 | 77 | 36 | 129 | 12 | 100 | 20 | 132 | 23 | 43 | 30 | 96 | 601 |
| 05:30 PM | 25 | 201 | 20 | 246 | 18 | 77 | 37 | 132 | 12 | 116 | 25 | 153 | 27 | 51 | 34 | 112 | 643 |
| 05:45 PM | 32 | 195 | 25 | 252 | 11 | 85 | 45 | 141 | 15 | 97 | 28 | 140 | 17 | 51 | 20 | 88 | 621 |
| Total Volume | 117 | 752 | 76 | 945 | 65 | 311 | 159 | 535 | 52 | 415 | 96 | 563 | 88 | 201 | 106 | 395 | 2438 |
| % App. Total | 12.4 | 79.6 | 8 | | 12.1 | 58.1 | 29.7 | | 9.2 | 73.7 | 17.1 | | 22.3 | 50.9 | 26.8 | | |
| PHF | .813 | .935 | .760 | .938 | .813 | .915 | .883 | .949 | .867 | .894 | .857 | .920 | .815 | .897 | .779 | .882 | .948 |

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115th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 6

Groups Printed- SU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 6 | 0 | 8 | 0 | 2 | 0 | 2 | 0 | 6 | 0 | 6 | 0 | 3 | 0 | 3 | 19 |
| 04:15 PM | 0 | 5 | 2 | 7 | 0 | 2 | 1 | 3 | 0 | 3 | 1 | 4 | 1 | 0 | 0 | 1 | 15 |
| 04:30 PM | 0 | 6 | 0 | 6 | 1 | 3 | 0 | 4 | 0 | 5 | 1 | 6 | 1 | 1 | 0 | 2 | 18 |
| 04:45 PM | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 2 | 7 | 1 | 10 | 0 | 2 | 0 | 2 | 19 |
| Total | 2 | 23 | 2 | 27 | 1 | 8 | 1 | 10 | 2 | 21 | 3 | 26 | 2 | 6 | 0 | 8 | 71 |
| 05:00 PM | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 0 | 2 | 0 | 2 | 16 |
| 05:15 PM | 0 | 7 | 0 | 7 | 0 | 3 | 0 | 3 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 15 |
| 05:30 PM | 0 | 4 | 0 | 4 | 1 | 2 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 11 |
| 05:45 PM | 0 | 5 | 0 | 5 | 0 | 1 | 1 | 2 | 0 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 13 |
| Total | 0 | 22 | 1 | 23 | 1 | 6 | 1 | 8 | 0 | 16 | 2 | 18 | 0 | 4 | 2 | 6 | 55 |
| Grand Total | 2 | 45 | 3 | 50 | 2 | 14 | 2 | 18 | 2 | 37 | 5 | 44 | 2 | 10 | 2 | 14 | 126 |
| Apprch % | 4 | 90 | 6 | | 11.1 | 77.8 | 11.1 | | 4.5 | 84.1 | 11.4 | | 14.3 | 71.4 | 14.3 | | |
| Total % | 1.6 | 35.7 | 2.4 | 39.7 | 1.6 | 11.1 | 1.6 | 14.3 | 1.6 | 29.4 | 4 | 34.9 | 1.6 | 7.9 | 1.6 | 11.1 | |

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115th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/9/2012

Page No : 7

Groups Printed- MU

| | Halsted St From North | | | | 115th St From East | | | | Halsted St From South | | | | 115th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 3 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Grand Total | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 6 |
| Apprch % | 0 | 66.7 | 33.3 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 100 | 0 | 0 | | |
| Total % | 0 | 33.3 | 16.7 | 50 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 16.7 | 0 | 0 | 16.7 | |

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115th St and Halsted St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/9/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | 115th St Crossing East Leg | | | Halsted St Crossing South Leg | | | 115th St Crossing West Leg | | | Int. Total |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 1 | 7 | 8 | 1 | 16 | 17 | 0 | 0 | 0 | 0 | 4 | 4 | 29 |
| 04:15 PM | 0 | 2 | 2 | 1 | 7 | 8 | 0 | 10 | 10 | 0 | 7 | 7 | 27 |
| 04:30 PM | 0 | 14 | 14 | 1 | 5 | 6 | 1 | 7 | 8 | 0 | 7 | 7 | 35 |
| 04:45 PM | 0 | 8 | 8 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 1 | 1 | 16 |
| Total | 1 | 31 | 32 | 3 | 29 | 32 | 1 | 23 | 24 | 0 | 19 | 19 | 107 |
| 05:00 PM | 0 | 3 | 3 | 0 | 13 | 13 | 0 | 10 | 10 | 0 | 5 | 5 | 31 |
| 05:15 PM | 0 | 9 | 9 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 4 | 4 | 17 |
| 05:30 PM | 0 | 4 | 4 | 0 | 5 | 5 | 0 | 3 | 3 | 0 | 4 | 4 | 16 |
| 05:45 PM | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 9 | 9 | 18 |
| Total | 0 | 19 | 19 | 0 | 25 | 25 | 0 | 16 | 16 | 0 | 22 | 22 | 82 |
| Grand Total | 1 | 50 | 51 | 3 | 54 | 57 | 1 | 39 | 40 | 0 | 41 | 41 | 189 |
| Apprch % | 2 | 98 | | 5.3 | 94.7 | | 2.5 | 97.5 | | 0 | 100 | | |
| Total % | 0.5 | 26.5 | 27 | 1.6 | 28.6 | 30.2 | 0.5 | 20.6 | 21.2 | 0 | 21.7 | 21.7 | |

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115th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 8 | 0 | 13 | 21 | 9 | 68 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 62 | 19 | 81 | 179 |
| 07:15 AM | 9 | 0 | 11 | 20 | 5 | 82 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 76 | 15 | 91 | 198 |
| 07:30 AM | 9 | 0 | 16 | 25 | 9 | 74 | 0 | 83 | 0 | 0 | 0 | 0 | 0 | 77 | 14 | 91 | 199 |
| 07:45 AM | 14 | 0 | 14 | 28 | 7 | 102 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 93 | 27 | 120 | 257 |
| Total | 40 | 0 | 54 | 94 | 30 | 326 | 0 | 356 | 0 | 0 | 0 | 0 | 0 | 308 | 75 | 383 | 833 |
| 08:00 AM | 21 | 0 | 15 | 36 | 13 | 96 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 81 | 19 | 100 | 245 |
| 08:15 AM | 22 | 0 | 13 | 35 | 13 | 98 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 72 | 16 | 88 | 234 |
| 08:30 AM | 14 | 0 | 11 | 25 | 9 | 123 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 89 | 18 | 107 | 264 |
| 08:45 AM | 21 | 0 | 5 | 26 | 8 | 124 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 92 | 30 | 122 | 280 |
| Total | 78 | 0 | 44 | 122 | 43 | 441 | 0 | 484 | 0 | 0 | 0 | 0 | 0 | 334 | 83 | 417 | 1023 |
| Grand Total | 118 | 0 | 98 | 216 | 73 | 767 | 0 | 840 | 0 | 0 | 0 | 0 | 0 | 642 | 158 | 800 | 1856 |
| Apprch % | 54.6 | 0 | 45.4 | | 8.7 | 91.3 | 0 | | 0 | 0 | 0 | | 0 | 80.2 | 19.8 | | |
| Total % | 6.4 | 0 | 5.3 | 11.6 | 3.9 | 41.3 | 0 | 45.3 | 0 | 0 | 0 | 0 | 0 | 34.6 | 8.5 | 43.1 | |
| PC | 116 | 0 | 97 | 213 | 71 | 729 | 0 | 800 | 0 | 0 | 0 | 0 | 0 | 621 | 144 | 765 | 1778 |
| % PC | 98.3 | 0 | 99 | 98.6 | 97.3 | 95 | 0 | 95.2 | 0 | 0 | 0 | 0 | 0 | 96.7 | 91.1 | 95.6 | 95.8 |
| SU | 2 | 0 | 1 | 3 | 2 | 36 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 21 | 14 | 35 | 76 |
| % SU | 1.7 | 0 | 1 | 1.4 | 2.7 | 4.7 | 0 | 4.5 | 0 | 0 | 0 | 0 | 0 | 3.3 | 8.9 | 4.4 | 4.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|--|-------------------------------------|------|-----------|------------|-----------------------|------------|------|------------|-------------------------------------|------|------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 21 | 0 | 15 | 36 | 13 | 96 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 81 | 19 | 100 | 245 |
| 08:15 AM | 22 | 0 | 13 | 35 | 13 | 98 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 72 | 16 | 88 | 234 |
| 08:30 AM | 14 | 0 | 11 | 25 | 9 | 123 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 89 | 18 | 107 | 264 |
| 08:45 AM | 21 | 0 | 5 | 26 | 8 | 124 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 92 | 30 | 122 | 280 |
| Total Volume | 78 | 0 | 44 | 122 | 43 | 441 | 0 | 484 | 0 | 0 | 0 | 0 | 0 | 334 | 83 | 417 | 1023 |
| % App. Total | 63.9 | 0 | 36.1 | | 8.9 | 91.1 | 0 | | 0 | 0 | 0 | | 0 | 80.1 | 19.9 | | |
| PHF | .886 | .000 | .733 | .847 | .827 | .889 | .000 | .917 | .000 | .000 | .000 | .000 | .000 | .908 | .692 | .855 | .913 |

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115th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 7 |
| 07:15 AM | 1 | 0 | 0 | 1 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 15 |
| 07:30 AM | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 7 | 10 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 8 |
| Total | 1 | 0 | 1 | 2 | 1 | 19 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 11 | 7 | 18 | 40 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 11 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 9 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 9 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 7 |
| Total | 1 | 0 | 0 | 1 | 1 | 17 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 17 | 36 |
| Grand Total | 2 | 0 | 1 | 3 | 2 | 36 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 21 | 14 | 35 | 76 |
| Apprch % | 66.7 | 0 | 33.3 | | 5.3 | 94.7 | 0 | | 0 | 0 | 0 | | 0 | 60 | 40 | | |
| Total % | 2.6 | 0 | 1.3 | 3.9 | 2.6 | 47.4 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 27.6 | 18.4 | 46.1 | |

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115th St and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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115th St and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Ped
Site Code : 00000000
Start Date : 6/12/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 115th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 115th St Crossing West Leg | | | Int. Total |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 6 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 2 | 2 | 15 |
| 07:45 AM | 0 | 6 | 6 | 1 | 2 | 3 | 2 | 3 | 5 | 0 | 1 | 1 | 15 |
| Total | 0 | 17 | 17 | 1 | 2 | 3 | 2 | 12 | 14 | 0 | 3 | 3 | 37 |
| 08:00 AM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 10 |
| 08:15 AM | 0 | 3 | 3 | 1 | 1 | 2 | 0 | 7 | 7 | 0 | 0 | 0 | 12 |
| 08:30 AM | 0 | 8 | 8 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 3 | 3 | 20 |
| 08:45 AM | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 12 |
| Total | 0 | 24 | 24 | 1 | 6 | 7 | 0 | 18 | 18 | 0 | 5 | 5 | 54 |
| Grand Total | 0 | 41 | 41 | 2 | 8 | 10 | 2 | 30 | 32 | 0 | 8 | 8 | 91 |
| Apprch % | 0 | 100 | | 20 | 80 | | 6.2 | 93.8 | | 0 | 100 | | |
| Total % | 0 | 45.1 | 45.1 | 2.2 | 8.8 | 11 | 2.2 | 33 | 35.2 | 0 | 8.8 | 8.8 | |

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115th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 20 | 0 | 12 | 32 | 9 | 92 | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 96 | 26 | 122 | 255 |
| 04:15 PM | 38 | 0 | 21 | 59 | 6 | 112 | 0 | 118 | 0 | 0 | 0 | 0 | 0 | 93 | 15 | 108 | 285 |
| 04:30 PM | 30 | 0 | 24 | 54 | 5 | 104 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 86 | 17 | 103 | 266 |
| 04:45 PM | 33 | 0 | 10 | 43 | 3 | 84 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 58 | 21 | 79 | 209 |
| Total | 121 | 0 | 67 | 188 | 23 | 392 | 0 | 415 | 0 | 0 | 0 | 0 | 0 | 333 | 79 | 412 | 1015 |
| 05:00 PM | 27 | 0 | 26 | 53 | 8 | 103 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 94 | 19 | 113 | 277 |
| 05:15 PM | 36 | 0 | 21 | 57 | 6 | 103 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 87 | 23 | 110 | 276 |
| 05:30 PM | 54 | 0 | 30 | 84 | 12 | 128 | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 96 | 14 | 110 | 334 |
| 05:45 PM | 32 | 0 | 35 | 67 | 8 | 99 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 95 | 17 | 112 | 286 |
| Total | 149 | 0 | 112 | 261 | 34 | 433 | 0 | 467 | 0 | 0 | 0 | 0 | 0 | 372 | 73 | 445 | 1173 |
| Grand Total | 270 | 0 | 179 | 449 | 57 | 825 | 0 | 882 | 0 | 0 | 0 | 0 | 0 | 705 | 152 | 857 | 2188 |
| Apprch % | 60.1 | 0 | 39.9 | | 6.5 | 93.5 | 0 | | 0 | 0 | 0 | | 0 | 82.3 | 17.7 | | |
| Total % | 12.3 | 0 | 8.2 | 20.5 | 2.6 | 37.7 | 0 | 40.3 | 0 | 0 | 0 | 0 | 0 | 32.2 | 6.9 | 39.2 | |
| PC | 270 | 0 | 179 | 449 | 57 | 800 | 0 | 857 | 0 | 0 | 0 | 0 | 0 | 695 | 144 | 839 | 2145 |
| % PC | 100 | 0 | 100 | 100 | 100 | 97 | 0 | 97.2 | 0 | 0 | 0 | 0 | 0 | 98.6 | 94.7 | 97.9 | 98 |
| SU | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 10 | 8 | 18 | 42 |
| % SU | 0 | 0 | 0 | 0 | 0 | 2.9 | 0 | 2.7 | 0 | 0 | 0 | 0 | 0 | 1.4 | 5.3 | 2.1 | 1.9 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|--|-------------------------------------|------|-----------|------------|-----------------------|------------|------|------------|-------------------------------------|------|------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 27 | 0 | 26 | 53 | 8 | 103 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 94 | 19 | 113 | 277 |
| 05:15 PM | 36 | 0 | 21 | 57 | 6 | 103 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 87 | 23 | 110 | 276 |
| 05:30 PM | 54 | 0 | 30 | 84 | 12 | 128 | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 96 | 14 | 110 | 334 |
| 05:45 PM | 32 | 0 | 35 | 67 | 8 | 99 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 95 | 17 | 112 | 286 |
| Total Volume | 149 | 0 | 112 | 261 | 34 | 433 | 0 | 467 | 0 | 0 | 0 | 0 | 0 | 372 | 73 | 445 | 1173 |
| % App. Total | 57.1 | 0 | 42.9 | | 7.3 | 92.7 | 0 | | 0 | 0 | 0 | | 0 | 83.6 | 16.4 | | |
| PHF | .690 | .000 | .800 | .777 | .708 | .846 | .000 | .834 | .000 | .000 | .000 | .000 | .000 | .969 | .793 | .985 | .878 |

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115th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 9 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 6 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 8 | 22 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 8 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 4 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 6 | 4 | 10 | 20 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 10 | 8 | 18 | 42 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 55.6 | 44.4 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 57.1 | 0 | 57.1 | 0 | 0 | 0 | 0 | 0 | 23.8 | 19 | 42.9 | |

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115th St and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 115th St From East | | | | Martin Luther King Dr From South | | | | 115th St From West | | | | |
|-------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|-------------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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115th St and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Ped
Site Code : 00000000
Start Date : 6/12/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 115th St Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|---|------|------------|-------------------------------|------|------------|---|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 04:30 PM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 8 |
| 04:45 PM | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 9 |
| Total | 0 | 18 | 18 | 0 | 1 | 1 | 0 | 4 | 4 | 1 | 2 | 3 | 26 |
| 05:00 PM | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 0 | 0 | 11 |
| 05:15 PM | 2 | 11 | 13 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 4 | 19 |
| 05:30 PM | 1 | 3 | 4 | 1 | 2 | 3 | 0 | 1 | 1 | 0 | 1 | 1 | 9 |
| 05:45 PM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 0 | 0 | 6 |
| Total | 3 | 17 | 20 | 1 | 6 | 7 | 0 | 13 | 13 | 0 | 5 | 5 | 45 |
| Grand Total | 3 | 35 | 38 | 1 | 7 | 8 | 0 | 17 | 17 | 1 | 7 | 8 | 71 |
| Apprch % | 7.9 | 92.1 | | 12.5 | 87.5 | | 0 | 100 | | 12.5 | 87.5 | | |
| Total % | 4.2 | 49.3 | 53.5 | 1.4 | 9.9 | 11.3 | 0 | 23.9 | 23.9 | 1.4 | 9.9 | 11.3 | |

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115th St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 7 | 11 | 4 | 22 | 2 | 41 | 2 | 45 | 10 | 32 | 5 | 47 | 2 | 55 | 6 | 63 | 177 |
| 07:15 AM | 9 | 17 | 3 | 29 | 3 | 64 | 3 | 70 | 8 | 17 | 10 | 35 | 4 | 48 | 7 | 59 | 193 |
| 07:30 AM | 10 | 18 | 3 | 31 | 0 | 60 | 2 | 62 | 8 | 32 | 6 | 46 | 4 | 62 | 7 | 73 | 212 |
| 07:45 AM | 15 | 12 | 7 | 34 | 2 | 49 | 3 | 54 | 9 | 23 | 15 | 47 | 6 | 76 | 13 | 95 | 230 |
| Total | 41 | 58 | 17 | 116 | 7 | 214 | 10 | 231 | 35 | 104 | 36 | 175 | 16 | 241 | 33 | 290 | 812 |
| 08:00 AM | 8 | 15 | 7 | 30 | 1 | 54 | 5 | 60 | 4 | 26 | 6 | 36 | 5 | 71 | 9 | 85 | 211 |
| 08:15 AM | 6 | 9 | 2 | 17 | 5 | 53 | 4 | 62 | 4 | 32 | 8 | 44 | 3 | 47 | 9 | 59 | 182 |
| 08:30 AM | 10 | 18 | 4 | 32 | 5 | 53 | 6 | 64 | 10 | 23 | 12 | 45 | 3 | 61 | 7 | 71 | 212 |
| 08:45 AM | 11 | 17 | 5 | 33 | 7 | 86 | 6 | 99 | 7 | 17 | 9 | 33 | 4 | 67 | 9 | 80 | 245 |
| Total | 35 | 59 | 18 | 112 | 18 | 246 | 21 | 285 | 25 | 98 | 35 | 158 | 15 | 246 | 34 | 295 | 850 |
| Grand Total | 76 | 117 | 35 | 228 | 25 | 460 | 31 | 516 | 60 | 202 | 71 | 333 | 31 | 487 | 67 | 585 | 1662 |
| Apprch % | 33.3 | 51.3 | 15.4 | | 4.8 | 89.1 | 6 | | 18 | 60.7 | 21.3 | | 5.3 | 83.2 | 11.5 | | |
| Total % | 4.6 | 7 | 2.1 | 13.7 | 1.5 | 27.7 | 1.9 | 31 | 3.6 | 12.2 | 4.3 | 20 | 1.9 | 29.3 | 4 | 35.2 | |
| PC | 73 | 110 | 33 | 216 | 22 | 438 | 29 | 489 | 57 | 199 | 69 | 325 | 30 | 467 | 64 | 561 | 1591 |
| % PC | 96.1 | 94 | 94.3 | 94.7 | 88 | 95.2 | 93.5 | 94.8 | 95 | 98.5 | 97.2 | 97.6 | 96.8 | 95.9 | 95.5 | 95.9 | 95.7 |
| SU | 3 | 7 | 2 | 12 | 3 | 19 | 2 | 24 | 3 | 3 | 2 | 8 | 1 | 20 | 3 | 24 | 68 |
| % SU | 3.9 | 6 | 5.7 | 5.3 | 12 | 4.1 | 6.5 | 4.7 | 5 | 1.5 | 2.8 | 2.4 | 3.2 | 4.1 | 4.5 | 4.1 | 4.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 |

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 15 | 7 | 30 | 1 | 54 | 5 | 60 | 4 | 26 | 6 | 36 | 5 | 71 | 9 | 85 | 211 |
| 08:15 AM | 6 | 9 | 2 | 17 | 5 | 53 | 4 | 62 | 4 | 32 | 8 | 44 | 3 | 47 | 9 | 59 | 182 |
| 08:30 AM | 10 | 18 | 4 | 32 | 5 | 53 | 6 | 64 | 10 | 23 | 12 | 45 | 3 | 61 | 7 | 71 | 212 |
| 08:45 AM | 11 | 17 | 5 | 33 | 7 | 86 | 6 | 99 | 7 | 17 | 9 | 33 | 4 | 67 | 9 | 80 | 245 |
| Total Volume | 35 | 59 | 18 | 112 | 18 | 246 | 21 | 285 | 25 | 98 | 35 | 158 | 15 | 246 | 34 | 295 | 850 |
| % App. Total | 31.2 | 52.7 | 16.1 | | 6.3 | 86.3 | 7.4 | | 15.8 | 62 | 22.2 | | 5.1 | 83.4 | 11.5 | | |
| PHF | .795 | .819 | .643 | .848 | .643 | .715 | .875 | .720 | .625 | .766 | .729 | .878 | .750 | .866 | .944 | .868 | .867 |

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115th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 7 |
| 07:15 AM | 0 | 1 | 0 | 1 | 1 | 4 | 0 | 5 | 1 | 1 | 0 | 2 | 0 | 1 | 1 | 2 | 10 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 4 |
| 07:45 AM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 6 |
| Total | 2 | 2 | 0 | 4 | 1 | 9 | 0 | 10 | 1 | 1 | 0 | 2 | 0 | 10 | 1 | 11 | 27 |
| 08:00 AM | 1 | 2 | 0 | 3 | 0 | 2 | 1 | 3 | 1 | 0 | 2 | 3 | 1 | 3 | 0 | 4 | 13 |
| 08:15 AM | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 3 | 2 | 5 | 9 |
| 08:30 AM | 0 | 1 | 0 | 1 | 1 | 5 | 0 | 6 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 10 |
| 08:45 AM | 0 | 1 | 2 | 3 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 9 |
| Total | 1 | 5 | 2 | 8 | 2 | 10 | 2 | 14 | 2 | 2 | 2 | 6 | 1 | 10 | 2 | 13 | 41 |
| Grand Total | 3 | 7 | 2 | 12 | 3 | 19 | 2 | 24 | 3 | 3 | 2 | 8 | 1 | 20 | 3 | 24 | 68 |
| Apprch % | 25 | 58.3 | 16.7 | | 12.5 | 79.2 | 8.3 | | 37.5 | 37.5 | 25 | | 4.2 | 83.3 | 12.5 | | |
| Total % | 4.4 | 10.3 | 2.9 | 17.6 | 4.4 | 27.9 | 2.9 | 35.3 | 4.4 | 4.4 | 2.9 | 11.8 | 1.5 | 29.4 | 4.4 | 35.3 | |

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773-283-2600 Fax: 773-283-2602

www.RWAengineers.com

115th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 100 | 0 | 100 | 0 | 0 | 0 | | 0 | 0 | 0 | | |

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115th St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 4

Groups Printed- Peds and Bikes

| | Wentworth Ave Crossing North Leg | | | 115th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 1 | 1 | 8 |
| 07:15 AM | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 3 | 3 | 10 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 4 | 5 |
| 07:45 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 4 |
| Total | 1 | 4 | 5 | 0 | 1 | 1 | 0 | 12 | 12 | 0 | 9 | 9 | 27 |
| 08:00 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 1 | 7 |
| 08:15 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 15 | 15 | 0 | 3 | 3 | 20 |
| 08:30 AM | 1 | 2 | 3 | 2 | 5 | 7 | 0 | 4 | 4 | 0 | 0 | 0 | 14 |
| 08:45 AM | 1 | 3 | 4 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 0 | 0 | 11 |
| Total | 2 | 8 | 10 | 2 | 8 | 10 | 0 | 28 | 28 | 0 | 4 | 4 | 52 |
| Grand Total | 3 | 12 | 15 | 2 | 9 | 11 | 0 | 40 | 40 | 0 | 13 | 13 | 79 |
| Apprch % | 20 | 80 | | 18.2 | 81.8 | | 0 | 100 | | 0 | 100 | | |
| Total % | 3.8 | 15.2 | 19 | 2.5 | 11.4 | 13.9 | 0 | 50.6 | 50.6 | 0 | 16.5 | 16.5 | |

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115th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 12 | 30 | 4 | 46 | 5 | 76 | 10 | 91 | 6 | 18 | 5 | 29 | 3 | 80 | 9 | 92 | 258 |
| 04:15 PM | 19 | 25 | 2 | 46 | 1 | 48 | 2 | 51 | 6 | 24 | 9 | 39 | 7 | 77 | 8 | 92 | 228 |
| 04:30 PM | 15 | 31 | 9 | 55 | 6 | 126 | 11 | 143 | 3 | 20 | 4 | 27 | 13 | 69 | 12 | 94 | 319 |
| 04:45 PM | 13 | 35 | 10 | 58 | 3 | 77 | 5 | 85 | 6 | 15 | 5 | 26 | 6 | 74 | 14 | 94 | 263 |
| Total | 59 | 121 | 25 | 205 | 15 | 327 | 28 | 370 | 21 | 77 | 23 | 121 | 29 | 300 | 43 | 372 | 1068 |
| 05:00 PM | 25 | 30 | 10 | 65 | 8 | 100 | 11 | 119 | 6 | 16 | 5 | 27 | 5 | 66 | 12 | 83 | 294 |
| 05:15 PM | 11 | 18 | 12 | 41 | 6 | 102 | 5 | 113 | 8 | 15 | 6 | 29 | 11 | 72 | 11 | 94 | 277 |
| 05:30 PM | 13 | 41 | 7 | 61 | 4 | 85 | 4 | 93 | 6 | 25 | 8 | 39 | 4 | 67 | 11 | 82 | 275 |
| 05:45 PM | 12 | 28 | 5 | 45 | 5 | 88 | 12 | 105 | 12 | 21 | 7 | 40 | 10 | 90 | 14 | 114 | 304 |
| Total | 61 | 117 | 34 | 212 | 23 | 375 | 32 | 430 | 32 | 77 | 26 | 135 | 30 | 295 | 48 | 373 | 1150 |
| Grand Total | 120 | 238 | 59 | 417 | 38 | 702 | 60 | 800 | 53 | 154 | 49 | 256 | 59 | 595 | 91 | 745 | 2218 |
| Apprch % | 28.8 | 57.1 | 14.1 | | 4.8 | 87.8 | 7.5 | | 20.7 | 60.2 | 19.1 | | 7.9 | 79.9 | 12.2 | | |
| Total % | 5.4 | 10.7 | 2.7 | 18.8 | 1.7 | 31.7 | 2.7 | 36.1 | 2.4 | 6.9 | 2.2 | 11.5 | 2.7 | 26.8 | 4.1 | 33.6 | |
| PC | 120 | 237 | 58 | 415 | 38 | 692 | 60 | 790 | 52 | 153 | 49 | 254 | 58 | 582 | 89 | 729 | 2188 |
| % PC | 100 | 99.6 | 98.3 | 99.5 | 100 | 98.6 | 100 | 98.8 | 98.1 | 99.4 | 100 | 99.2 | 98.3 | 97.8 | 97.8 | 97.9 | 98.6 |
| SU | 0 | 1 | 1 | 2 | 0 | 10 | 0 | 10 | 1 | 1 | 0 | 2 | 1 | 13 | 2 | 16 | 30 |
| % SU | 0 | 0.4 | 1.7 | 0.5 | 0 | 1.4 | 0 | 1.2 | 1.9 | 0.6 | 0 | 0.8 | 1.7 | 2.2 | 2.2 | 2.1 | 1.4 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 15 | 31 | 9 | 55 | 6 | 126 | 11 | 143 | 3 | 20 | 4 | 27 | 13 | 69 | 12 | 94 | 319 |
| 04:45 PM | 13 | 35 | 10 | 58 | 3 | 77 | 5 | 85 | 6 | 15 | 5 | 26 | 6 | 74 | 14 | 94 | 263 |
| 05:00 PM | 25 | 30 | 10 | 65 | 8 | 100 | 11 | 119 | 6 | 16 | 5 | 27 | 5 | 66 | 12 | 83 | 294 |
| 05:15 PM | 11 | 18 | 12 | 41 | 6 | 102 | 5 | 113 | 8 | 15 | 6 | 29 | 11 | 72 | 11 | 94 | 277 |
| Total Volume | 64 | 114 | 41 | 219 | 23 | 405 | 32 | 460 | 23 | 66 | 20 | 109 | 35 | 281 | 49 | 365 | 1153 |
| % App. Total | 29.2 | 52.1 | 18.7 | | 5 | 88 | 7 | | 21.1 | 60.6 | 18.3 | | 9.6 | 77 | 13.4 | | |
| PHF | .640 | .814 | .854 | .842 | .719 | .804 | .727 | .804 | .719 | .825 | .833 | .940 | .673 | .949 | .875 | .971 | .904 |

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115th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 3 |
| 04:45 PM | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| Total | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 1 | 5 | 0 | 6 | 13 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 5 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 | 2 | 10 | 17 |
| Grand Total | 0 | 1 | 1 | 2 | 0 | 10 | 0 | 10 | 1 | 1 | 0 | 2 | 1 | 13 | 2 | 16 | 30 |
| Apprch % | 0 | 50 | 50 | | 0 | 100 | 0 | | 50 | 50 | 0 | | 6.2 | 81.2 | 12.5 | | |
| Total % | 0 | 3.3 | 3.3 | 6.7 | 0 | 33.3 | 0 | 33.3 | 3.3 | 3.3 | 0 | 6.7 | 3.3 | 43.3 | 6.7 | 53.3 | |

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115th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 115th St From East | | | | Wentworth Ave From South | | | | 115th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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115th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 8

Groups Printed- Peds and Bikes

| | Wentworth Ave Crossing North Leg | | | 115th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 115th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 6 | 6 | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 1 | 1 | 15 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 5 | 5 | 0 | 4 | 4 | 0 | 6 | 6 | 1 | 4 | 5 | 20 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 2 | 2 | 7 |
| Total | 0 | 11 | 11 | 0 | 6 | 6 | 0 | 17 | 17 | 1 | 7 | 8 | 42 |
| 05:00 PM | 0 | 3 | 3 | 0 | 1 | 1 | 1 | 5 | 6 | 0 | 0 | 0 | 10 |
| 05:15 PM | 0 | 2 | 2 | 1 | 3 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 10 |
| 05:30 PM | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 1 | 1 | 9 |
| 05:45 PM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 10 |
| Total | 1 | 11 | 12 | 1 | 4 | 5 | 1 | 20 | 21 | 0 | 1 | 1 | 39 |
| Grand Total | 1 | 22 | 23 | 1 | 10 | 11 | 1 | 37 | 38 | 1 | 8 | 9 | 81 |
| Apprch % | 4.3 | 95.7 | | 9.1 | 90.9 | | 2.6 | 97.4 | | 11.1 | 88.9 | | |
| Total % | 1.2 | 27.2 | 28.4 | 1.2 | 12.3 | 13.6 | 1.2 | 45.7 | 46.9 | 1.2 | 9.9 | 11.1 | |

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119th St and Halsted Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/10/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 12 | 47 | 8 | 67 | 19 | 27 | 3 | 49 | 7 | 195 | 13 | 215 | 10 | 38 | 23 | 71 | 402 |
| 07:15 AM | 14 | 47 | 6 | 67 | 19 | 40 | 2 | 61 | 7 | 205 | 23 | 235 | 10 | 39 | 33 | 82 | 445 |
| 07:30 AM | 14 | 71 | 8 | 93 | 10 | 31 | 10 | 51 | 16 | 203 | 9 | 228 | 16 | 53 | 44 | 113 | 485 |
| 07:45 AM | 22 | 88 | 12 | 122 | 13 | 43 | 8 | 64 | 17 | 195 | 25 | 237 | 15 | 70 | 46 | 131 | 554 |
| Total | 62 | 253 | 34 | 349 | 61 | 141 | 23 | 225 | 47 | 798 | 70 | 915 | 51 | 200 | 146 | 397 | 1886 |
| 08:00 AM | 21 | 92 | 15 | 128 | 9 | 26 | 11 | 46 | 10 | 180 | 17 | 207 | 21 | 57 | 50 | 128 | 509 |
| 08:15 AM | 24 | 97 | 11 | 132 | 12 | 36 | 5 | 53 | 12 | 152 | 27 | 191 | 14 | 58 | 52 | 124 | 500 |
| 08:30 AM | 24 | 76 | 15 | 115 | 13 | 30 | 10 | 53 | 7 | 155 | 16 | 178 | 19 | 52 | 34 | 105 | 451 |
| 08:45 AM | 18 | 107 | 11 | 136 | 11 | 35 | 4 | 50 | 9 | 108 | 25 | 142 | 17 | 53 | 32 | 102 | 430 |
| Total | 87 | 372 | 52 | 511 | 45 | 127 | 30 | 202 | 38 | 595 | 85 | 718 | 71 | 220 | 168 | 459 | 1890 |
| Grand Total | 149 | 625 | 86 | 860 | 106 | 268 | 53 | 427 | 85 | 1393 | 155 | 1633 | 122 | 420 | 314 | 856 | 3776 |
| Apprch % | 17.3 | 72.7 | 10 | | 24.8 | 62.8 | 12.4 | | 5.2 | 85.3 | 9.5 | | 14.3 | 49.1 | 36.7 | | |
| Total % | 3.9 | 16.6 | 2.3 | 22.8 | 2.8 | 7.1 | 1.4 | 11.3 | 2.3 | 36.9 | 4.1 | 43.2 | 3.2 | 11.1 | 8.3 | 22.7 | |
| PC | 136 | 583 | 83 | 802 | 101 | 252 | 52 | 405 | 77 | 1332 | 148 | 1557 | 116 | 386 | 302 | 804 | 3568 |
| % PC | 91.3 | 93.3 | 96.5 | 93.3 | 95.3 | 94 | 98.1 | 94.8 | 90.6 | 95.6 | 95.5 | 95.3 | 95.1 | 91.9 | 96.2 | 93.9 | 94.5 |
| SU | 12 | 39 | 3 | 54 | 5 | 15 | 1 | 21 | 7 | 57 | 6 | 70 | 6 | 33 | 11 | 50 | 195 |
| % SU | 8.1 | 6.2 | 3.5 | 6.3 | 4.7 | 5.6 | 1.9 | 4.9 | 8.2 | 4.1 | 3.9 | 4.3 | 4.9 | 7.9 | 3.5 | 5.8 | 5.2 |
| MU | 1 | 3 | 0 | 4 | 0 | 1 | 0 | 1 | 1 | 4 | 1 | 6 | 0 | 1 | 1 | 2 | 13 |
| % MU | 0.7 | 0.5 | 0 | 0.5 | 0 | 0.4 | 0 | 0.2 | 1.2 | 0.3 | 0.6 | 0.4 | 0 | 0.2 | 0.3 | 0.2 | 0.3 |

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|--|---------------------------|-----------|------|------------|-----------------------|-----------|------|------------|---------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 14 | 71 | 8 | 93 | 10 | 31 | 10 | 51 | 16 | 203 | 9 | 228 | 16 | 53 | 44 | 113 | 485 |
| 07:45 AM | 22 | 88 | 12 | 122 | 13 | 43 | 8 | 64 | 17 | 195 | 25 | 237 | 15 | 70 | 46 | 131 | 554 |
| 08:00 AM | 21 | 92 | 15 | 128 | 9 | 26 | 11 | 46 | 10 | 180 | 17 | 207 | 21 | 57 | 50 | 128 | 509 |
| 08:15 AM | 24 | 97 | 11 | 132 | 12 | 36 | 5 | 53 | 12 | 152 | 27 | 191 | 14 | 58 | 52 | 124 | 500 |
| Total Volume | 81 | 348 | 46 | 475 | 44 | 136 | 34 | 214 | 55 | 730 | 78 | 863 | 66 | 238 | 192 | 496 | 2048 |
| % App. Total | 17.1 | 73.3 | 9.7 | | 20.6 | 63.6 | 15.9 | | 6.4 | 84.6 | 9 | | 13.3 | 48 | 38.7 | | |
| PHF | .844 | .897 | .767 | .900 | .846 | .791 | .773 | .836 | .809 | .899 | .722 | .910 | .786 | .850 | .923 | .947 | .924 |

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119th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 2

Groups Printed- SU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 5 | 1 | 8 | 2 | 2 | 1 | 5 | 1 | 6 | 0 | 7 | 1 | 4 | 0 | 5 | 25 |
| 07:15 AM | 1 | 5 | 0 | 6 | 1 | 3 | 0 | 4 | 0 | 7 | 0 | 7 | 1 | 3 | 2 | 6 | 23 |
| 07:30 AM | 1 | 5 | 1 | 7 | 0 | 0 | 0 | 0 | 1 | 10 | 1 | 12 | 1 | 6 | 3 | 10 | 29 |
| 07:45 AM | 1 | 8 | 0 | 9 | 0 | 3 | 0 | 3 | 1 | 10 | 0 | 11 | 1 | 5 | 2 | 8 | 31 |
| Total | 5 | 23 | 2 | 30 | 3 | 8 | 1 | 12 | 3 | 33 | 1 | 37 | 4 | 18 | 7 | 29 | 108 |
| 08:00 AM | 2 | 2 | 0 | 4 | 1 | 2 | 0 | 3 | 2 | 8 | 1 | 11 | 2 | 6 | 0 | 8 | 26 |
| 08:15 AM | 2 | 4 | 0 | 6 | 1 | 3 | 0 | 4 | 2 | 7 | 1 | 10 | 0 | 2 | 1 | 3 | 23 |
| 08:30 AM | 2 | 4 | 1 | 7 | 0 | 2 | 0 | 2 | 0 | 7 | 2 | 9 | 0 | 5 | 2 | 7 | 25 |
| 08:45 AM | 1 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 2 | 1 | 3 | 13 |
| Total | 7 | 16 | 1 | 24 | 2 | 7 | 0 | 9 | 4 | 24 | 5 | 33 | 2 | 15 | 4 | 21 | 87 |
| Grand Total | 12 | 39 | 3 | 54 | 5 | 15 | 1 | 21 | 7 | 57 | 6 | 70 | 6 | 33 | 11 | 50 | 195 |
| Apprch % | 22.2 | 72.2 | 5.6 | | 23.8 | 71.4 | 4.8 | | 10 | 81.4 | 8.6 | | 12 | 66 | 22 | | |
| Total % | 6.2 | 20 | 1.5 | 27.7 | 2.6 | 7.7 | 0.5 | 10.8 | 3.6 | 29.2 | 3.1 | 35.9 | 3.1 | 16.9 | 5.6 | 25.6 | |

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119th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 3

Groups Printed- MU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 1 | 4 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 3 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 5 | 0 | 1 | 1 | 2 | 9 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| Grand Total | 1 | 3 | 0 | 4 | 0 | 1 | 0 | 1 | 1 | 4 | 1 | 6 | 0 | 1 | 1 | 2 | 13 |
| Apprch % | 25 | 75 | 0 | | 0 | 100 | 0 | | 16.7 | 66.7 | 16.7 | | 0 | 50 | 50 | | |
| Total % | 7.7 | 23.1 | 0 | 30.8 | 0 | 7.7 | 0 | 7.7 | 7.7 | 30.8 | 7.7 | 46.2 | 0 | 7.7 | 7.7 | 15.4 | |

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119th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 1 | 13 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 10 | 24 |
| 07:15 AM | 0 | 4 | 4 | 1 | 2 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 10 |
| 07:30 AM | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 9 | 9 | 17 |
| 07:45 AM | 0 | 14 | 14 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 16 | 16 | 34 |
| Total | 1 | 35 | 36 | 1 | 8 | 9 | 0 | 3 | 3 | 1 | 36 | 37 | 85 |
| 08:00 AM | 0 | 6 | 6 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 5 | 6 | 14 |
| 08:15 AM | 0 | 9 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 12 | 12 | 22 |
| 08:30 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 6 |
| 08:45 AM | 1 | 5 | 6 | 0 | 1 | 1 | 0 | 2 | 2 | 1 | 2 | 3 | 12 |
| Total | 1 | 21 | 22 | 0 | 3 | 3 | 0 | 3 | 3 | 2 | 24 | 26 | 54 |
| Grand Total | 2 | 56 | 58 | 1 | 11 | 12 | 0 | 6 | 6 | 3 | 60 | 63 | 139 |
| Apprch % | 3.4 | 96.6 | | 8.3 | 91.7 | | 0 | 100 | | 4.8 | 95.2 | | |
| Total % | 1.4 | 40.3 | 41.7 | 0.7 | 7.9 | 8.6 | 0 | 4.3 | 4.3 | 2.2 | 43.2 | 45.3 | |

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119th St and Halsted Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/10/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 24 | 141 | 25 | 190 | 19 | 49 | 10 | 78 | 19 | 117 | 24 | 160 | 27 | 64 | 30 | 121 | 549 |
| 04:15 PM | 34 | 139 | 29 | 202 | 21 | 41 | 16 | 78 | 20 | 98 | 34 | 152 | 30 | 57 | 32 | 119 | 551 |
| 04:30 PM | 39 | 202 | 39 | 280 | 18 | 38 | 16 | 72 | 15 | 129 | 24 | 168 | 27 | 69 | 38 | 134 | 654 |
| 04:45 PM | 36 | 179 | 25 | 240 | 16 | 50 | 7 | 73 | 14 | 127 | 28 | 169 | 19 | 50 | 21 | 90 | 572 |
| Total | 133 | 661 | 118 | 912 | 74 | 178 | 49 | 301 | 68 | 471 | 110 | 649 | 103 | 240 | 121 | 464 | 2326 |
| 05:00 PM | 31 | 199 | 22 | 252 | 19 | 51 | 21 | 91 | 13 | 106 | 21 | 140 | 28 | 55 | 48 | 131 | 614 |
| 05:15 PM | 36 | 216 | 22 | 274 | 11 | 39 | 19 | 69 | 21 | 126 | 18 | 165 | 34 | 58 | 24 | 116 | 624 |
| 05:30 PM | 26 | 202 | 20 | 248 | 9 | 45 | 21 | 75 | 12 | 110 | 31 | 153 | 37 | 60 | 25 | 122 | 598 |
| 05:45 PM | 27 | 186 | 32 | 245 | 22 | 55 | 20 | 97 | 14 | 101 | 22 | 137 | 27 | 66 | 33 | 126 | 605 |
| Total | 120 | 803 | 96 | 1019 | 61 | 190 | 81 | 332 | 60 | 443 | 92 | 595 | 126 | 239 | 130 | 495 | 2441 |
| Grand Total | 253 | 1464 | 214 | 1931 | 135 | 368 | 130 | 633 | 128 | 914 | 202 | 1244 | 229 | 479 | 251 | 959 | 4767 |
| Apprch % | 13.1 | 75.8 | 11.1 | | 21.3 | 58.1 | 20.5 | | 10.3 | 73.5 | 16.2 | | 23.9 | 49.9 | 26.2 | | |
| Total % | 5.3 | 30.7 | 4.5 | 40.5 | 2.8 | 7.7 | 2.7 | 13.3 | 2.7 | 19.2 | 4.2 | 26.1 | 4.8 | 10 | 5.3 | 20.1 | |
| PC | 241 | 1422 | 213 | 1876 | 132 | 351 | 126 | 609 | 127 | 876 | 200 | 1203 | 225 | 463 | 250 | 938 | 4626 |
| % PC | 95.3 | 97.1 | 99.5 | 97.2 | 97.8 | 95.4 | 96.9 | 96.2 | 99.2 | 95.8 | 99 | 96.7 | 98.3 | 96.7 | 99.6 | 97.8 | 97 |
| SU | 11 | 40 | 1 | 52 | 3 | 17 | 4 | 24 | 1 | 37 | 1 | 39 | 4 | 16 | 1 | 21 | 136 |
| % SU | 4.3 | 2.7 | 0.5 | 2.7 | 2.2 | 4.6 | 3.1 | 3.8 | 0.8 | 4 | 0.5 | 3.1 | 1.7 | 3.3 | 0.4 | 2.2 | 2.9 |
| MU | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 5 |
| % MU | 0.4 | 0.1 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.5 | 0.2 | 0 | 0 | 0 | 0 | 0.1 |

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|--|---------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|---------------------------|------------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 39 | 202 | 39 | 280 | 18 | 38 | 16 | 72 | 15 | 129 | 24 | 168 | 27 | 69 | 38 | 134 | 654 |
| 04:45 PM | 36 | 179 | 25 | 240 | 16 | 50 | 7 | 73 | 14 | 127 | 28 | 169 | 19 | 50 | 21 | 90 | 572 |
| 05:00 PM | 31 | 199 | 22 | 252 | 19 | 51 | 21 | 91 | 13 | 106 | 21 | 140 | 28 | 55 | 48 | 131 | 614 |
| 05:15 PM | 36 | 216 | 22 | 274 | 11 | 39 | 19 | 69 | 21 | 126 | 18 | 165 | 34 | 58 | 24 | 116 | 624 |
| Total Volume | 142 | 796 | 108 | 1046 | 64 | 178 | 63 | 305 | 63 | 488 | 91 | 642 | 108 | 232 | 131 | 471 | 2464 |
| % App. Total | 13.6 | 76.1 | 10.3 | | 21 | 58.4 | 20.7 | | 9.8 | 76 | 14.2 | | 22.9 | 49.3 | 27.8 | | |
| PHF | .910 | .921 | .692 | .934 | .842 | .873 | .750 | .838 | .750 | .946 | .813 | .950 | .794 | .841 | .682 | .879 | .942 |

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119th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 6

Groups Printed- SU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 3 | 0 | 4 | 2 | 3 | 2 | 7 | 1 | 4 | 0 | 5 | 1 | 2 | 0 | 3 | 19 |
| 04:15 PM | 1 | 6 | 1 | 8 | 1 | 4 | 1 | 6 | 0 | 5 | 1 | 6 | 0 | 1 | 0 | 1 | 21 |
| 04:30 PM | 3 | 3 | 0 | 6 | 0 | 1 | 1 | 2 | 0 | 6 | 0 | 6 | 1 | 1 | 0 | 2 | 16 |
| 04:45 PM | 2 | 7 | 0 | 9 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 16 |
| Total | 7 | 19 | 1 | 27 | 3 | 10 | 4 | 17 | 1 | 19 | 1 | 21 | 2 | 5 | 0 | 7 | 72 |
| 05:00 PM | 1 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 3 | 1 | 4 | 13 |
| 05:15 PM | 1 | 7 | 0 | 8 | 0 | 3 | 0 | 3 | 0 | 9 | 0 | 9 | 1 | 1 | 0 | 2 | 22 |
| 05:30 PM | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 9 |
| 05:45 PM | 2 | 6 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 0 | 5 | 0 | 5 | 20 |
| Total | 4 | 21 | 0 | 25 | 0 | 7 | 0 | 7 | 0 | 18 | 0 | 18 | 2 | 11 | 1 | 14 | 64 |
| Grand Total | 11 | 40 | 1 | 52 | 3 | 17 | 4 | 24 | 1 | 37 | 1 | 39 | 4 | 16 | 1 | 21 | 136 |
| Apprch % | 21.2 | 76.9 | 1.9 | | 12.5 | 70.8 | 16.7 | | 2.6 | 94.9 | 2.6 | | 19 | 76.2 | 4.8 | | |
| Total % | 8.1 | 29.4 | 0.7 | 38.2 | 2.2 | 12.5 | 2.9 | 17.6 | 0.7 | 27.2 | 0.7 | 28.7 | 2.9 | 11.8 | 0.7 | 15.4 | |

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119th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 7

Groups Printed- MU

| | Halsted Ave From North | | | | 119th St From East | | | | Halsted Ave From South | | | | 119th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 5 |
| Apprch % | 33.3 | 66.7 | 0 | | 0 | 0 | 0 | | 0 | 50 | 50 | | 0 | 0 | 0 | | |
| Total % | 20 | 40 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 40 | 0 | 0 | 0 | 0 | |

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119th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 6 | 6 | 1 | 3 | 4 | 0 | 2 | 2 | 0 | 2 | 2 | 14 |
| 04:15 PM | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 8 | 8 | 16 |
| 04:30 PM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 2 | 2 | 1 | 25 | 26 | 34 |
| 04:45 PM | 1 | 8 | 9 | 3 | 5 | 8 | 0 | 5 | 5 | 1 | 12 | 13 | 35 |
| Total | 1 | 20 | 21 | 4 | 14 | 18 | 0 | 11 | 11 | 2 | 47 | 49 | 99 |
| 05:00 PM | 0 | 6 | 6 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 5 | 5 | 16 |
| 05:15 PM | 0 | 7 | 7 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 16 | 16 | 26 |
| 05:30 PM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 9 | 9 | 18 |
| 05:45 PM | 3 | 13 | 16 | 2 | 1 | 3 | 0 | 3 | 3 | 1 | 29 | 30 | 52 |
| Total | 3 | 28 | 31 | 2 | 11 | 13 | 0 | 8 | 8 | 1 | 59 | 60 | 112 |
| Grand Total | 4 | 48 | 52 | 6 | 25 | 31 | 0 | 19 | 19 | 3 | 106 | 109 | 211 |
| Apprch % | 7.7 | 92.3 | | 19.4 | 80.6 | | 0 | 100 | | 2.8 | 97.2 | | |
| Total % | 1.9 | 22.7 | 24.6 | 2.8 | 11.8 | 14.7 | 0 | 9 | 9 | 1.4 | 50.2 | 51.7 | |

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119th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 48 | 18 | 8 | 74 | 0 | 99 | 28 | 127 | 0 | 0 | 0 | 0 | 14 | 61 | 0 | 75 | 276 |
| 07:15 AM | 65 | 23 | 11 | 99 | 0 | 108 | 30 | 138 | 0 | 0 | 0 | 0 | 28 | 78 | 0 | 106 | 343 |
| 07:30 AM | 71 | 27 | 15 | 113 | 0 | 118 | 35 | 153 | 0 | 0 | 0 | 0 | 36 | 98 | 0 | 134 | 400 |
| 07:45 AM | 76 | 30 | 20 | 126 | 0 | 125 | 37 | 162 | 0 | 0 | 0 | 0 | 59 | 118 | 0 | 177 | 465 |
| Total | 260 | 98 | 54 | 412 | 0 | 450 | 130 | 580 | 0 | 0 | 0 | 0 | 137 | 355 | 0 | 492 | 1484 |
| 08:00 AM | 59 | 23 | 45 | 127 | 0 | 115 | 53 | 168 | 0 | 0 | 0 | 0 | 62 | 97 | 0 | 159 | 454 |
| 08:15 AM | 67 | 27 | 34 | 128 | 0 | 115 | 36 | 151 | 0 | 0 | 0 | 0 | 38 | 95 | 0 | 133 | 412 |
| 08:30 AM | 55 | 30 | 54 | 139 | 0 | 131 | 32 | 163 | 0 | 0 | 0 | 0 | 35 | 136 | 0 | 171 | 473 |
| 08:45 AM | 67 | 37 | 32 | 136 | 0 | 96 | 32 | 128 | 0 | 0 | 0 | 0 | 43 | 103 | 0 | 146 | 410 |
| Total | 248 | 117 | 165 | 530 | 0 | 457 | 153 | 610 | 0 | 0 | 0 | 0 | 178 | 431 | 0 | 609 | 1749 |
| Grand Total | 508 | 215 | 219 | 942 | 0 | 907 | 283 | 1190 | 0 | 0 | 0 | 0 | 315 | 786 | 0 | 1101 | 3233 |
| Apprch % | 53.9 | 22.8 | 23.2 | | 0 | 76.2 | 23.8 | | 0 | 0 | 0 | | 28.6 | 71.4 | 0 | | |
| Total % | 15.7 | 6.7 | 6.8 | 29.1 | 0 | 28.1 | 8.8 | 36.8 | 0 | 0 | 0 | 0 | 9.7 | 24.3 | 0 | 34.1 | |
| PC | 498 | 211 | 216 | 925 | 0 | 877 | 277 | 1154 | 0 | 0 | 0 | 0 | 288 | 724 | 0 | 1012 | 3091 |
| % PC | 98 | 98.1 | 98.6 | 98.2 | 0 | 96.7 | 97.9 | 97 | 0 | 0 | 0 | 0 | 91.4 | 92.1 | 0 | 91.9 | 95.6 |
| SU | 9 | 3 | 3 | 15 | 0 | 21 | 6 | 27 | 0 | 0 | 0 | 0 | 12 | 38 | 0 | 50 | 92 |
| % SU | 1.8 | 1.4 | 1.4 | 1.6 | 0 | 2.3 | 2.1 | 2.3 | 0 | 0 | 0 | 0 | 3.8 | 4.8 | 0 | 4.5 | 2.8 |
| MU | 1 | 1 | 0 | 2 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 15 | 24 | 0 | 39 | 50 |
| % MU | 0.2 | 0.5 | 0 | 0.2 | 0 | 1 | 0 | 0.8 | 0 | 0 | 0 | 0 | 4.8 | 3.1 | 0 | 3.5 | 1.5 |

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|--|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 76 | 30 | 20 | 126 | 0 | 125 | 37 | 162 | 0 | 0 | 0 | 0 | 59 | 118 | 0 | 177 | 465 |
| 08:00 AM | 59 | 23 | 45 | 127 | 0 | 115 | 53 | 168 | 0 | 0 | 0 | 0 | 62 | 97 | 0 | 159 | 454 |
| 08:15 AM | 67 | 27 | 34 | 128 | 0 | 115 | 36 | 151 | 0 | 0 | 0 | 0 | 38 | 95 | 0 | 133 | 412 |
| 08:30 AM | 55 | 30 | 54 | 139 | 0 | 131 | 32 | 163 | 0 | 0 | 0 | 0 | 35 | 136 | 0 | 171 | 473 |
| Total Volume | 257 | 110 | 153 | 520 | 0 | 486 | 158 | 644 | 0 | 0 | 0 | 0 | 194 | 446 | 0 | 640 | 1804 |
| % App. Total | 49.4 | 21.2 | 29.4 | | 0 | 75.5 | 24.5 | | 0 | 0 | 0 | | 30.3 | 69.7 | 0 | | |
| PHF | .845 | .917 | .708 | .935 | .000 | .927 | .745 | .958 | .000 | .000 | .000 | .000 | .782 | .820 | .000 | .904 | .953 |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 2

Groups Printed- SU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:45 AM | 1 | 1 | 1 | 3 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 19 |
| Total | 1 | 1 | 1 | 3 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 20 |
| 08:00 AM | 3 | 0 | 1 | 4 | 0 | 4 | 2 | 6 | 0 | 0 | 0 | 0 | 5 | 8 | 0 | 13 | 23 |
| 08:15 AM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 10 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 5 | 9 | 0 | 14 | 21 |
| 08:45 AM | 3 | 2 | 1 | 6 | 0 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 5 | 18 |
| Total | 8 | 2 | 2 | 12 | 0 | 17 | 5 | 22 | 0 | 0 | 0 | 0 | 12 | 26 | 0 | 38 | 72 |
| Grand Total | 9 | 3 | 3 | 15 | 0 | 21 | 6 | 27 | 0 | 0 | 0 | 0 | 12 | 38 | 0 | 50 | 92 |
| Apprch % | 60 | 20 | 20 | | 0 | 77.8 | 22.2 | | 0 | 0 | 0 | | 24 | 76 | 0 | | |
| Total % | 9.8 | 3.3 | 3.3 | 16.3 | 0 | 22.8 | 6.5 | 29.3 | 0 | 0 | 0 | 0 | 13 | 41.3 | 0 | 54.3 | |

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119th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 3

Groups Printed- MU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 11 | 15 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 7 | 7 |
| Total | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 7 | 11 | 0 | 18 | 22 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 0 | 9 | 9 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 7 |
| 08:30 AM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 6 | 8 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 4 |
| Total | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 8 | 13 | 0 | 21 | 28 |
| Grand Total | 1 | 1 | 0 | 2 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 15 | 24 | 0 | 39 | 50 |
| Apprch % | 50 | 50 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 38.5 | 61.5 | 0 | | |
| Total % | 2 | 2 | 0 | 4 | 0 | 18 | 0 | 18 | 0 | 0 | 0 | 0 | 30 | 48 | 0 | 78 | |

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119th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 3 | 3 | 8 |
| Grand Total | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 3 | 3 | 12 |
| Apprch % | 0 | 100 | | 0 | 0 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 41.7 | 41.7 | 0 | 0 | 0 | 0 | 33.3 | 33.3 | 0 | 25 | 25 | |

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119th St and Marshfield Ave
Chicago, IL
4:00 Pm - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/10/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 121 | 57 | 71 | 249 | 0 | 149 | 39 | 188 | 0 | 0 | 0 | 0 | 90 | 120 | 0 | 210 | 647 |
| 04:15 PM | 103 | 69 | 58 | 230 | 0 | 138 | 58 | 196 | 0 | 0 | 0 | 0 | 71 | 128 | 0 | 199 | 625 |
| 04:30 PM | 86 | 55 | 57 | 198 | 0 | 140 | 54 | 194 | 0 | 0 | 0 | 0 | 79 | 99 | 0 | 178 | 570 |
| 04:45 PM | 96 | 63 | 53 | 212 | 0 | 114 | 70 | 184 | 0 | 0 | 0 | 0 | 77 | 91 | 0 | 168 | 564 |
| Total | 406 | 244 | 239 | 889 | 0 | 541 | 221 | 762 | 0 | 0 | 0 | 0 | 317 | 438 | 0 | 755 | 2406 |
| 05:00 PM | 103 | 60 | 74 | 237 | 0 | 155 | 59 | 214 | 0 | 0 | 0 | 0 | 86 | 111 | 0 | 197 | 648 |
| 05:15 PM | 77 | 65 | 71 | 213 | 0 | 136 | 55 | 191 | 0 | 0 | 0 | 0 | 74 | 91 | 0 | 165 | 569 |
| 05:30 PM | 96 | 81 | 59 | 236 | 0 | 146 | 49 | 195 | 0 | 0 | 0 | 0 | 74 | 115 | 0 | 189 | 620 |
| 05:45 PM | 104 | 59 | 72 | 235 | 0 | 129 | 47 | 176 | 0 | 0 | 0 | 0 | 78 | 105 | 0 | 183 | 594 |
| Total | 380 | 265 | 276 | 921 | 0 | 566 | 210 | 776 | 0 | 0 | 0 | 0 | 312 | 422 | 0 | 734 | 2431 |
| Grand Total | 786 | 509 | 515 | 1810 | 0 | 1107 | 431 | 1538 | 0 | 0 | 0 | 0 | 629 | 860 | 0 | 1489 | 4837 |
| Apprch % | 43.4 | 28.1 | 28.5 | | 0 | 72 | 28 | | 0 | 0 | 0 | | 42.2 | 57.8 | 0 | | |
| Total % | 16.2 | 10.5 | 10.6 | 37.4 | 0 | 22.9 | 8.9 | 31.8 | 0 | 0 | 0 | 0 | 13 | 17.8 | 0 | 30.8 | |
| PC | 780 | 504 | 513 | 1797 | 0 | 1090 | 426 | 1516 | 0 | 0 | 0 | 0 | 598 | 829 | 0 | 1427 | 4740 |
| % PC | 99.2 | 99 | 99.6 | 99.3 | 0 | 98.5 | 98.8 | 98.6 | 0 | 0 | 0 | 0 | 95.1 | 96.4 | 0 | 95.8 | 98 |
| SU | 4 | 4 | 2 | 10 | 0 | 14 | 4 | 18 | 0 | 0 | 0 | 0 | 18 | 21 | 0 | 39 | 67 |
| % SU | 0.5 | 0.8 | 0.4 | 0.6 | 0 | 1.3 | 0.9 | 1.2 | 0 | 0 | 0 | 0 | 2.9 | 2.4 | 0 | 2.6 | 1.4 |
| MU | 2 | 1 | 0 | 3 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 13 | 10 | 0 | 23 | 30 |
| % MU | 0.3 | 0.2 | 0 | 0.2 | 0 | 0.3 | 0.2 | 0.3 | 0 | 0 | 0 | 0 | 2.1 | 1.2 | 0 | 1.5 | 0.6 |

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|--|------------------------------|-----------|-----------|------------|-----------------------|------------|-----------|------------|------------------------------|------|------|------------|-----------------------|------------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 103 | 60 | 74 | 237 | 0 | 155 | 59 | 214 | 0 | 0 | 0 | 0 | 86 | 111 | 0 | 197 | 648 |
| 05:15 PM | 77 | 65 | 71 | 213 | 0 | 136 | 55 | 191 | 0 | 0 | 0 | 0 | 74 | 91 | 0 | 165 | 569 |
| 05:30 PM | 96 | 81 | 59 | 236 | 0 | 146 | 49 | 195 | 0 | 0 | 0 | 0 | 74 | 115 | 0 | 189 | 620 |
| 05:45 PM | 104 | 59 | 72 | 235 | 0 | 129 | 47 | 176 | 0 | 0 | 0 | 0 | 78 | 105 | 0 | 183 | 594 |
| Total Volume | 380 | 265 | 276 | 921 | 0 | 566 | 210 | 776 | 0 | 0 | 0 | 0 | 312 | 422 | 0 | 734 | 2431 |
| % App. Total | 41.3 | 28.8 | 30 | | 0 | 72.9 | 27.1 | | 0 | 0 | 0 | | 42.5 | 57.5 | 0 | | |
| PHF | .913 | .818 | .932 | .972 | .000 | .913 | .890 | .907 | .000 | .000 | .000 | .000 | .907 | .917 | .000 | .931 | .938 |

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119th St and Marshfield Ave

Chicago, IL

4:00 Pm - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 6

Groups Printed- SU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 7 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 6 |
| 04:30 PM | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 7 | 11 |
| 04:45 PM | 1 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| Total | 2 | 1 | 0 | 3 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 8 | 9 | 0 | 17 | 28 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 10 |
| 05:15 PM | 1 | 1 | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 10 |
| 05:30 PM | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 7 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 7 | 0 | 10 | 12 |
| Total | 2 | 3 | 2 | 7 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 10 | 12 | 0 | 22 | 39 |
| Grand Total | 4 | 4 | 2 | 10 | 0 | 14 | 4 | 18 | 0 | 0 | 0 | 0 | 18 | 21 | 0 | 39 | 67 |
| Apprch % | 40 | 40 | 20 | | 0 | 77.8 | 22.2 | | 0 | 0 | 0 | | 46.2 | 53.8 | 0 | | |
| Total % | 6 | 6 | 3 | 14.9 | 0 | 20.9 | 6 | 26.9 | 0 | 0 | 0 | 0 | 26.9 | 31.3 | 0 | 58.2 | |

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119th St and Marshfield Ave

Chicago, IL

4:00 Pm - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/10/2012

Page No : 7

Groups Printed- MU

| | Marshfield Ave From North | | | | 119th St From East | | | | Marshfield Ave From South | | | | 119th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 6 |
| Total | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 0 | 9 | 12 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 3 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 | 7 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 8 | 6 | 0 | 14 | 18 |
| Grand Total | 2 | 1 | 0 | 3 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 13 | 10 | 0 | 23 | 30 |
| Apprch % | 66.7 | 33.3 | 0 | | 0 | 75 | 25 | | 0 | 0 | 0 | | 56.5 | 43.5 | 0 | | |
| Total % | 6.7 | 3.3 | 0 | 10 | 0 | 10 | 3.3 | 13.3 | 0 | 0 | 0 | 0 | 43.3 | 33.3 | 0 | 76.7 | |

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119th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/10/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 04:15 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 7 |
| 04:30 PM | 2 | 3 | 5 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 6 |
| 04:45 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 10 |
| Total | 2 | 16 | 18 | 0 | 0 | 0 | 0 | 13 | 13 | 0 | 0 | 0 | 31 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 5 |
| 05:15 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:30 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 10 |
| Grand Total | 2 | 20 | 22 | 0 | 0 | 0 | 0 | 19 | 19 | 0 | 0 | 0 | 41 |
| Apprch % | 9.1 | 90.9 | | 0 | 0 | | 0 | 100 | | 0 | 0 | | |
| Total % | 4.9 | 48.8 | 53.7 | 0 | 0 | 0 | 0 | 46.3 | 46.3 | 0 | 0 | 0 | |

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119th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/15/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 19 | 28 | 0 | 47 | 2 | 1 | 0 | 3 | 4 | 56 | 5 | 65 | 5 | 2 | 32 | 39 | 154 |
| 07:15 AM | 22 | 23 | 1 | 46 | 1 | 6 | 1 | 8 | 3 | 70 | 7 | 80 | 6 | 3 | 31 | 40 | 174 |
| 07:30 AM | 21 | 36 | 0 | 57 | 2 | 4 | 3 | 9 | 4 | 78 | 4 | 86 | 7 | 6 | 35 | 48 | 200 |
| 07:45 AM | 16 | 53 | 4 | 73 | 4 | 5 | 3 | 12 | 8 | 70 | 7 | 85 | 6 | 6 | 42 | 54 | 224 |
| Total | 78 | 140 | 5 | 223 | 9 | 16 | 7 | 32 | 19 | 274 | 23 | 316 | 24 | 17 | 140 | 181 | 752 |
| 08:00 AM | 26 | 36 | 0 | 62 | 0 | 5 | 1 | 6 | 5 | 73 | 10 | 88 | 9 | 3 | 30 | 42 | 198 |
| 08:15 AM | 19 | 43 | 1 | 63 | 0 | 3 | 2 | 5 | 2 | 65 | 5 | 72 | 5 | 3 | 31 | 39 | 179 |
| 08:30 AM | 19 | 41 | 0 | 60 | 1 | 4 | 0 | 5 | 2 | 74 | 8 | 84 | 17 | 6 | 29 | 52 | 201 |
| 08:45 AM | 23 | 48 | 5 | 76 | 3 | 6 | 1 | 10 | 2 | 71 | 12 | 85 | 14 | 7 | 34 | 55 | 226 |
| Total | 87 | 168 | 6 | 261 | 4 | 18 | 4 | 26 | 11 | 283 | 35 | 329 | 45 | 19 | 124 | 188 | 804 |
| Grand Total | 165 | 308 | 11 | 484 | 13 | 34 | 11 | 58 | 30 | 557 | 58 | 645 | 69 | 36 | 264 | 369 | 1556 |
| Apprch % | 34.1 | 63.6 | 2.3 | | 22.4 | 58.6 | 19 | | 4.7 | 86.4 | 9 | | 18.7 | 9.8 | 71.5 | | |
| Total % | 10.6 | 19.8 | 0.7 | 31.1 | 0.8 | 2.2 | 0.7 | 3.7 | 1.9 | 35.8 | 3.7 | 41.5 | 4.4 | 2.3 | 17 | 23.7 | |
| PC | 147 | 283 | 11 | 441 | 13 | 34 | 11 | 58 | 29 | 542 | 58 | 629 | 66 | 35 | 237 | 338 | 1466 |
| % PC | 89.1 | 91.9 | 100 | 91.1 | 100 | 100 | 100 | 100 | 96.7 | 97.3 | 100 | 97.5 | 95.7 | 97.2 | 89.8 | 91.6 | 94.2 |
| SU | 17 | 25 | 0 | 42 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 16 | 3 | 0 | 25 | 28 | 86 |
| % SU | 10.3 | 8.1 | 0 | 8.7 | 0 | 0 | 0 | 0 | 3.3 | 2.7 | 0 | 2.5 | 4.3 | 0 | 9.5 | 7.6 | 5.5 |
| MU | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 4 |
| % MU | 0.6 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.8 | 0.8 | 0.8 | 0.3 |

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 26 | 36 | 0 | 62 | 0 | 5 | 1 | 6 | 5 | 73 | 10 | 88 | 9 | 3 | 30 | 42 | 198 |
| 08:15 AM | 19 | 43 | 1 | 63 | 0 | 3 | 2 | 5 | 2 | 65 | 5 | 72 | 5 | 3 | 31 | 39 | 179 |
| 08:30 AM | 19 | 41 | 0 | 60 | 1 | 4 | 0 | 5 | 2 | 74 | 8 | 84 | 17 | 6 | 29 | 52 | 201 |
| 08:45 AM | 23 | 48 | 5 | 76 | 3 | 6 | 1 | 10 | 2 | 71 | 12 | 85 | 14 | 7 | 34 | 55 | 226 |
| Total Volume | 87 | 168 | 6 | 261 | 4 | 18 | 4 | 26 | 11 | 283 | 35 | 329 | 45 | 19 | 124 | 188 | 804 |
| % App. Total | 33.3 | 64.4 | 2.3 | | 15.4 | 69.2 | 15.4 | | 3.3 | 86 | 10.6 | | 23.9 | 10.1 | 66 | | |
| PHF | .837 | .875 | .300 | .859 | .333 | .750 | .500 | .650 | .550 | .956 | .729 | .935 | .662 | .679 | .912 | .855 | .889 |

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119th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/15/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 4 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 3 | 11 |
| 07:15 AM | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 6 | 6 | 13 |
| 07:30 AM | 2 | 3 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 9 |
| 07:45 AM | 2 | 5 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 4 | 6 | 14 |
| Total | 10 | 12 | 0 | 22 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 2 | 0 | 16 | 18 | 47 |
| 08:00 AM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 7 |
| 08:15 AM | 2 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 3 | 3 | 13 |
| 08:30 AM | 1 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 2 | 3 | 11 |
| 08:45 AM | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 8 |
| Total | 7 | 13 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 1 | 0 | 9 | 10 | 39 |
| Grand Total | 17 | 25 | 0 | 42 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 16 | 3 | 0 | 25 | 28 | 86 |
| Apprch % | 40.5 | 59.5 | 0 | | 0 | 0 | 0 | | 6.2 | 93.8 | 0 | | 10.7 | 0 | 89.3 | | |
| Total % | 19.8 | 29.1 | 0 | 48.8 | 0 | 0 | 0 | 0 | 1.2 | 17.4 | 0 | 18.6 | 3.5 | 0 | 29.1 | 32.6 | |

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119th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/15/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:45 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Total | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 4 |
| Grand Total | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 4 |
| Apprch % | 100 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 33.3 | 66.7 | | |
| Total % | 25 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 50 | 75 | |

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119th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/15/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 10 | 10 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 4 | 4 | 18 |
| 07:15 AM | 0 | 8 | 8 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 18 |
| 07:30 AM | 1 | 6 | 7 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 4 | 4 | 16 |
| 07:45 AM | 0 | 11 | 11 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 6 | 6 | 21 |
| Total | 1 | 35 | 36 | 0 | 13 | 13 | 0 | 4 | 4 | 0 | 20 | 20 | 73 |
| 08:00 AM | 0 | 14 | 14 | 0 | 8 | 8 | 0 | 7 | 7 | 0 | 9 | 9 | 38 |
| 08:15 AM | 0 | 18 | 18 | 0 | 3 | 3 | 0 | 12 | 12 | 0 | 15 | 15 | 48 |
| 08:30 AM | 0 | 9 | 9 | 0 | 8 | 8 | 0 | 22 | 22 | 0 | 13 | 13 | 52 |
| 08:45 AM | 0 | 10 | 10 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 11 | 11 | 30 |
| Total | 0 | 51 | 51 | 0 | 22 | 22 | 0 | 47 | 47 | 0 | 48 | 48 | 168 |
| Grand Total | 1 | 86 | 87 | 0 | 35 | 35 | 0 | 51 | 51 | 0 | 68 | 68 | 241 |
| Apprch % | 1.1 | 98.9 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0.4 | 35.7 | 36.1 | 0 | 14.5 | 14.5 | 0 | 21.2 | 21.2 | 0 | 28.2 | 28.2 | |

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119th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/15/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 35 | 73 | 3 | 111 | 0 | 5 | 1 | 6 | 1 | 57 | 7 | 65 | 18 | 8 | 26 | 52 | 234 |
| 04:15 PM | 32 | 79 | 4 | 115 | 4 | 2 | 1 | 7 | 7 | 60 | 11 | 78 | 10 | 8 | 35 | 53 | 253 |
| 04:30 PM | 32 | 89 | 2 | 123 | 5 | 4 | 1 | 10 | 3 | 57 | 9 | 69 | 21 | 8 | 28 | 57 | 259 |
| 04:45 PM | 32 | 67 | 2 | 101 | 2 | 4 | 4 | 10 | 3 | 62 | 12 | 77 | 25 | 6 | 31 | 62 | 250 |
| Total | 131 | 308 | 11 | 450 | 11 | 15 | 7 | 33 | 14 | 236 | 39 | 289 | 74 | 30 | 120 | 224 | 996 |
| 05:00 PM | 45 | 94 | 4 | 143 | 3 | 6 | 1 | 10 | 2 | 50 | 10 | 62 | 17 | 13 | 31 | 61 | 276 |
| 05:15 PM | 46 | 91 | 5 | 142 | 1 | 3 | 3 | 7 | 2 | 51 | 8 | 61 | 22 | 7 | 42 | 71 | 281 |
| 05:30 PM | 30 | 98 | 2 | 130 | 3 | 1 | 1 | 5 | 3 | 57 | 6 | 66 | 17 | 6 | 36 | 59 | 260 |
| 05:45 PM | 40 | 96 | 6 | 142 | 2 | 4 | 3 | 9 | 1 | 61 | 13 | 75 | 20 | 9 | 38 | 67 | 293 |
| Total | 161 | 379 | 17 | 557 | 9 | 14 | 8 | 31 | 8 | 219 | 37 | 264 | 76 | 35 | 147 | 258 | 1110 |
| Grand Total | 292 | 687 | 28 | 1007 | 20 | 29 | 15 | 64 | 22 | 455 | 76 | 553 | 150 | 65 | 267 | 482 | 2106 |
| Apprch % | 29 | 68.2 | 2.8 | | 31.2 | 45.3 | 23.4 | | 4 | 82.3 | 13.7 | | 31.1 | 13.5 | 55.4 | | |
| Total % | 13.9 | 32.6 | 1.3 | 47.8 | 0.9 | 1.4 | 0.7 | 3 | 1 | 21.6 | 3.6 | 26.3 | 7.1 | 3.1 | 12.7 | 22.9 | |
| PC | 278 | 660 | 28 | 966 | 19 | 29 | 15 | 63 | 22 | 447 | 76 | 545 | 148 | 64 | 254 | 466 | 2040 |
| % PC | 95.2 | 96.1 | 100 | 95.9 | 95 | 100 | 100 | 98.4 | 100 | 98.2 | 100 | 98.6 | 98.7 | 98.5 | 95.1 | 96.7 | 96.9 |
| SU | 14 | 27 | 0 | 41 | 1 | 0 | 0 | 1 | 0 | 8 | 0 | 8 | 2 | 1 | 13 | 16 | 66 |
| % SU | 4.8 | 3.9 | 0 | 4.1 | 5 | 0 | 0 | 1.6 | 0 | 1.8 | 0 | 1.4 | 1.3 | 1.5 | 4.9 | 3.3 | 3.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 45 | 94 | 4 | 143 | 3 | 6 | 1 | 10 | 2 | 50 | 10 | 62 | 17 | 13 | 31 | 61 | 276 |
| 05:15 PM | 46 | 91 | 5 | 142 | 1 | 3 | 3 | 7 | 2 | 51 | 8 | 61 | 22 | 7 | 42 | 71 | 281 |
| 05:30 PM | 30 | 98 | 2 | 130 | 3 | 1 | 1 | 5 | 3 | 57 | 6 | 66 | 17 | 6 | 36 | 59 | 260 |
| 05:45 PM | 40 | 96 | 6 | 142 | 2 | 4 | 3 | 9 | 1 | 61 | 13 | 75 | 20 | 9 | 38 | 67 | 293 |
| Total Volume | 161 | 379 | 17 | 557 | 9 | 14 | 8 | 31 | 8 | 219 | 37 | 264 | 76 | 35 | 147 | 258 | 1110 |
| % App. Total | 28.9 | 68 | 3.1 | | 29 | 45.2 | 25.8 | | 3 | 83 | 14 | | 29.5 | 13.6 | 57 | | |
| PHF | .875 | .967 | .708 | .974 | .750 | .583 | .667 | .775 | .667 | .898 | .712 | .880 | .864 | .673 | .875 | .908 | .947 |

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119th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/15/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 3 | 4 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 10 |
| 04:15 PM | 1 | 3 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 7 |
| 04:30 PM | 2 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 9 |
| 04:45 PM | 1 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 3 | 4 | 12 |
| Total | 7 | 15 | 0 | 22 | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 6 | 1 | 1 | 7 | 9 | 38 |
| 05:00 PM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 05:15 PM | 2 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 9 |
| 05:30 PM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 6 |
| 05:45 PM | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 8 |
| Total | 7 | 12 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 6 | 7 | 28 |
| Grand Total | 14 | 27 | 0 | 41 | 1 | 0 | 0 | 1 | 0 | 8 | 0 | 8 | 2 | 1 | 13 | 16 | 66 |
| Apprch % | 34.1 | 65.9 | 0 | | 100 | 0 | 0 | | 0 | 100 | 0 | | 12.5 | 6.2 | 81.2 | | |
| Total % | 21.2 | 40.9 | 0 | 62.1 | 1.5 | 0 | 0 | 1.5 | 0 | 12.1 | 0 | 12.1 | 3 | 1.5 | 19.7 | 24.2 | |

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119th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/15/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 119th St From East | | | | Michigan Ave From South | | | | 119th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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119th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/15/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 17 | 17 | 0 | 12 | 12 | 0 | 9 | 9 | 0 | 15 | 15 | 53 |
| 04:15 PM | 0 | 20 | 20 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 24 | 24 | 52 |
| 04:30 PM | 0 | 14 | 14 | 0 | 8 | 8 | 0 | 9 | 9 | 0 | 21 | 21 | 52 |
| 04:45 PM | 0 | 13 | 13 | 0 | 9 | 9 | 0 | 9 | 9 | 1 | 13 | 14 | 45 |
| Total | 0 | 64 | 64 | 0 | 32 | 32 | 0 | 32 | 32 | 1 | 73 | 74 | 202 |
| 05:00 PM | 0 | 9 | 9 | 0 | 10 | 10 | 0 | 16 | 16 | 1 | 12 | 13 | 48 |
| 05:15 PM | 0 | 12 | 12 | 0 | 24 | 24 | 0 | 16 | 16 | 0 | 13 | 13 | 65 |
| 05:30 PM | 0 | 8 | 8 | 0 | 6 | 6 | 0 | 9 | 9 | 1 | 7 | 8 | 31 |
| 05:45 PM | 0 | 8 | 8 | 0 | 14 | 14 | 0 | 12 | 12 | 0 | 7 | 7 | 41 |
| Total | 0 | 37 | 37 | 0 | 54 | 54 | 0 | 53 | 53 | 2 | 39 | 41 | 185 |
| Grand Total | 0 | 101 | 101 | 0 | 86 | 86 | 0 | 85 | 85 | 3 | 112 | 115 | 387 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 2.6 | 97.4 | | |
| Total % | 0 | 26.1 | 26.1 | 0 | 22.2 | 22.2 | 0 | 22 | 22 | 0.8 | 28.9 | 29.7 | |

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119th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 1

Groups Printed- PC - SU - MU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 4 | 1 | 10 | 1 | 18 | 1 | 20 | 3 | 32 | 5 | 40 | 3 | 29 | 14 | 46 | 116 |
| 07:15 AM | 12 | 12 | 1 | 25 | 0 | 29 | 0 | 29 | 8 | 33 | 8 | 49 | 10 | 29 | 18 | 57 | 160 |
| 07:30 AM | 4 | 6 | 5 | 15 | 1 | 23 | 1 | 25 | 4 | 46 | 8 | 58 | 5 | 41 | 11 | 57 | 155 |
| 07:45 AM | 6 | 15 | 1 | 22 | 3 | 34 | 2 | 39 | 5 | 55 | 8 | 68 | 3 | 38 | 15 | 56 | 185 |
| Total | 27 | 37 | 8 | 72 | 5 | 104 | 4 | 113 | 20 | 166 | 29 | 215 | 21 | 137 | 58 | 216 | 616 |
| 08:00 AM | 11 | 10 | 1 | 22 | 1 | 38 | 2 | 41 | 3 | 39 | 6 | 48 | 4 | 43 | 17 | 64 | 175 |
| 08:15 AM | 5 | 14 | 1 | 20 | 1 | 38 | 1 | 40 | 5 | 36 | 10 | 51 | 7 | 38 | 15 | 60 | 171 |
| 08:30 AM | 9 | 18 | 3 | 30 | 2 | 47 | 2 | 51 | 10 | 35 | 13 | 58 | 9 | 35 | 16 | 60 | 199 |
| 08:45 AM | 11 | 18 | 1 | 30 | 2 | 36 | 1 | 39 | 2 | 41 | 8 | 51 | 8 | 35 | 17 | 60 | 180 |
| Total | 36 | 60 | 6 | 102 | 6 | 159 | 6 | 171 | 20 | 151 | 37 | 208 | 28 | 151 | 65 | 244 | 725 |
| Grand Total | 63 | 97 | 14 | 174 | 11 | 263 | 10 | 284 | 40 | 317 | 66 | 423 | 49 | 288 | 123 | 460 | 1341 |
| Apprch % | 36.2 | 55.7 | 8 | | 3.9 | 92.6 | 3.5 | | 9.5 | 74.9 | 15.6 | | 10.7 | 62.6 | 26.7 | | |
| Total % | 4.7 | 7.2 | 1 | 13 | 0.8 | 19.6 | 0.7 | 21.2 | 3 | 23.6 | 4.9 | 31.5 | 3.7 | 21.5 | 9.2 | 34.3 | |
| PC | 59 | 95 | 14 | 168 | 11 | 238 | 8 | 257 | 38 | 312 | 63 | 413 | 46 | 265 | 118 | 429 | 1267 |
| % PC | 93.7 | 97.9 | 100 | 96.6 | 100 | 90.5 | 80 | 90.5 | 95 | 98.4 | 95.5 | 97.6 | 93.9 | 92 | 95.9 | 93.3 | 94.5 |
| SU | 4 | 2 | 0 | 6 | 0 | 24 | 2 | 26 | 2 | 5 | 3 | 10 | 3 | 22 | 5 | 30 | 72 |
| % SU | 6.3 | 2.1 | 0 | 3.4 | 0 | 9.1 | 20 | 9.2 | 5 | 1.6 | 4.5 | 2.4 | 6.1 | 7.6 | 4.1 | 6.5 | 5.4 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.2 | 0.1 |

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|--|------------------------|-----------|----------|------------|-----------------------|-----------|------|------------|------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 6 | 15 | 1 | 22 | 3 | 34 | 2 | 39 | 5 | 55 | 8 | 68 | 3 | 38 | 15 | 56 | 185 |
| 08:00 AM | 11 | 10 | 1 | 22 | 1 | 38 | 2 | 41 | 3 | 39 | 6 | 48 | 4 | 43 | 17 | 64 | 175 |
| 08:15 AM | 5 | 14 | 1 | 20 | 1 | 38 | 1 | 40 | 5 | 36 | 10 | 51 | 7 | 38 | 15 | 60 | 171 |
| 08:30 AM | 9 | 18 | 3 | 30 | 2 | 47 | 2 | 51 | 10 | 35 | 13 | 58 | 9 | 35 | 16 | 60 | 199 |
| Total Volume | 31 | 57 | 6 | 94 | 7 | 157 | 7 | 171 | 23 | 165 | 37 | 225 | 23 | 154 | 63 | 240 | 730 |
| % App. Total | 33 | 60.6 | 6.4 | | 4.1 | 91.8 | 4.1 | | 10.2 | 73.3 | 16.4 | | 9.6 | 64.2 | 26.2 | | |
| PHF | .705 | .792 | .500 | .783 | .583 | .835 | .875 | .838 | .575 | .750 | .712 | .827 | .639 | .895 | .926 | .938 | .917 |

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119th St and State St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 2

Groups Printed- SU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 9 |
| 07:15 AM | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 2 | 8 |
| 07:30 AM | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 9 |
| 07:45 AM | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 0 | 1 | 0 | 1 | 1 | 5 | 0 | 6 | 13 |
| Total | 3 | 0 | 0 | 3 | 0 | 13 | 1 | 14 | 1 | 3 | 1 | 5 | 2 | 11 | 4 | 17 | 39 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 7 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 4 | 9 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 5 |
| 08:45 AM | 1 | 2 | 0 | 3 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 4 | 12 |
| Total | 1 | 2 | 0 | 3 | 0 | 11 | 1 | 12 | 1 | 2 | 2 | 5 | 1 | 11 | 1 | 13 | 33 |
| Grand Total | 4 | 2 | 0 | 6 | 0 | 24 | 2 | 26 | 2 | 5 | 3 | 10 | 3 | 22 | 5 | 30 | 72 |
| Apprch % | 66.7 | 33.3 | 0 | | 0 | 92.3 | 7.7 | | 20 | 50 | 30 | | 10 | 73.3 | 16.7 | | |
| Total % | 5.6 | 2.8 | 0 | 8.3 | 0 | 33.3 | 2.8 | 36.1 | 2.8 | 6.9 | 4.2 | 13.9 | 4.2 | 30.6 | 6.9 | 41.7 | |

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119th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 3

Groups Printed- MU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | |

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119th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/12/2012
Page No : 4

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 119th St Crossing East Leg | | | State St Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 |
| 07:15 AM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 0 | 0 | 11 |
| 07:30 AM | 1 | 2 | 3 | 0 | 4 | 4 | 0 | 6 | 6 | 0 | 2 | 2 | 15 |
| 07:45 AM | 0 | 2 | 2 | 0 | 2 | 2 | 1 | 4 | 5 | 1 | 0 | 1 | 10 |
| Total | 1 | 9 | 10 | 0 | 7 | 7 | 2 | 16 | 18 | 1 | 2 | 3 | 38 |
| 08:00 AM | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 1 | 1 | 12 |
| 08:15 AM | 0 | 2 | 2 | 0 | 9 | 9 | 0 | 3 | 3 | 0 | 1 | 1 | 15 |
| 08:30 AM | 0 | 12 | 12 | 0 | 4 | 4 | 0 | 9 | 9 | 0 | 5 | 5 | 30 |
| 08:45 AM | 0 | 7 | 7 | 1 | 1 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 12 |
| Total | 0 | 26 | 26 | 1 | 16 | 17 | 0 | 19 | 19 | 0 | 7 | 7 | 69 |
| Grand Total | 1 | 35 | 36 | 1 | 23 | 24 | 2 | 35 | 37 | 1 | 9 | 10 | 107 |
| Apprch % | 2.8 | 97.2 | | 4.2 | 95.8 | | 5.4 | 94.6 | | 10 | 90 | | |
| Total % | 0.9 | 32.7 | 33.6 | 0.9 | 21.5 | 22.4 | 1.9 | 32.7 | 34.6 | 0.9 | 8.4 | 9.3 | |

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119th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 5

Groups Printed- PC - SU - MU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 15 | 36 | 5 | 56 | 2 | 41 | 2 | 45 | 3 | 37 | 6 | 46 | 8 | 41 | 13 | 62 | 209 |
| 04:15 PM | 15 | 39 | 3 | 57 | 4 | 34 | 2 | 40 | 3 | 27 | 7 | 37 | 13 | 46 | 14 | 73 | 207 |
| 04:30 PM | 11 | 34 | 4 | 49 | 3 | 49 | 4 | 56 | 2 | 16 | 4 | 22 | 11 | 49 | 7 | 67 | 194 |
| 04:45 PM | 11 | 46 | 2 | 59 | 0 | 35 | 2 | 37 | 3 | 23 | 9 | 35 | 14 | 54 | 15 | 83 | 214 |
| Total | 52 | 155 | 14 | 221 | 9 | 159 | 10 | 178 | 11 | 103 | 26 | 140 | 46 | 190 | 49 | 285 | 824 |
| 05:00 PM | 12 | 40 | 1 | 53 | 2 | 49 | 1 | 52 | 1 | 31 | 8 | 40 | 4 | 47 | 12 | 63 | 208 |
| 05:15 PM | 10 | 36 | 4 | 50 | 5 | 53 | 4 | 62 | 2 | 14 | 7 | 23 | 10 | 48 | 11 | 69 | 204 |
| 05:30 PM | 14 | 41 | 6 | 61 | 1 | 47 | 0 | 48 | 5 | 22 | 6 | 33 | 10 | 38 | 19 | 67 | 209 |
| 05:45 PM | 18 | 25 | 1 | 44 | 1 | 31 | 5 | 37 | 7 | 21 | 7 | 35 | 13 | 39 | 11 | 63 | 179 |
| Total | 54 | 142 | 12 | 208 | 9 | 180 | 10 | 199 | 15 | 88 | 28 | 131 | 37 | 172 | 53 | 262 | 800 |
| Grand Total | 106 | 297 | 26 | 429 | 18 | 339 | 20 | 377 | 26 | 191 | 54 | 271 | 83 | 362 | 102 | 547 | 1624 |
| Apprch % | 24.7 | 69.2 | 6.1 | | 4.8 | 89.9 | 5.3 | | 9.6 | 70.5 | 19.9 | | 15.2 | 66.2 | 18.6 | | |
| Total % | 6.5 | 18.3 | 1.6 | 26.4 | 1.1 | 20.9 | 1.2 | 23.2 | 1.6 | 11.8 | 3.3 | 16.7 | 5.1 | 22.3 | 6.3 | 33.7 | |
| PC | 103 | 296 | 26 | 425 | 18 | 325 | 20 | 363 | 26 | 185 | 54 | 265 | 82 | 352 | 102 | 536 | 1589 |
| % PC | 97.2 | 99.7 | 100 | 99.1 | 100 | 95.9 | 100 | 96.3 | 100 | 96.9 | 100 | 97.8 | 98.8 | 97.2 | 100 | 98 | 97.8 |
| SU | 3 | 1 | 0 | 4 | 0 | 14 | 0 | 14 | 0 | 5 | 0 | 5 | 1 | 10 | 0 | 11 | 34 |
| % SU | 2.8 | 0.3 | 0 | 0.9 | 0 | 4.1 | 0 | 3.7 | 0 | 2.6 | 0 | 1.8 | 1.2 | 2.8 | 0 | 2 | 2.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0.1 |

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|--|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 11 | 46 | 2 | 59 | 0 | 35 | 2 | 37 | 3 | 23 | 9 | 35 | 14 | 54 | 15 | 83 | 214 |
| 05:00 PM | 12 | 40 | 1 | 53 | 2 | 49 | 1 | 52 | 1 | 31 | 8 | 40 | 4 | 47 | 12 | 63 | 208 |
| 05:15 PM | 10 | 36 | 4 | 50 | 5 | 53 | 4 | 62 | 2 | 14 | 7 | 23 | 10 | 48 | 11 | 69 | 204 |
| 05:30 PM | 14 | 41 | 6 | 61 | 1 | 47 | 0 | 48 | 5 | 22 | 6 | 33 | 10 | 38 | 19 | 67 | 209 |
| Total Volume | 47 | 163 | 13 | 223 | 8 | 184 | 7 | 199 | 11 | 90 | 30 | 131 | 38 | 187 | 57 | 282 | 835 |
| % App. Total | 21.1 | 73.1 | 5.8 | | 4 | 92.5 | 3.5 | | 8.4 | 68.7 | 22.9 | | 13.5 | 66.3 | 20.2 | | |
| PHF | .839 | .886 | .542 | .914 | .400 | .868 | .438 | .802 | .550 | .726 | .833 | .819 | .679 | .866 | .750 | .849 | .975 |

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119th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/12/2012
Page No : 6

Groups Printed- SU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 6 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 3 |
| 04:30 PM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 04:45 PM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| Total | 2 | 1 | 0 | 3 | 0 | 7 | 0 | 7 | 0 | 2 | 0 | 2 | 1 | 6 | 0 | 7 | 19 |
| 05:00 PM | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 5 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 4 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 1 | 0 | 0 | 1 | 0 | 7 | 0 | 7 | 0 | 3 | 0 | 3 | 0 | 4 | 0 | 4 | 15 |
| Grand Total | 3 | 1 | 0 | 4 | 0 | 14 | 0 | 14 | 0 | 5 | 0 | 5 | 1 | 10 | 0 | 11 | 34 |
| Apprch % | 75 | 25 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 9.1 | 90.9 | 0 | | |
| Total % | 8.8 | 2.9 | 0 | 11.8 | 0 | 41.2 | 0 | 41.2 | 0 | 14.7 | 0 | 14.7 | 2.9 | 29.4 | 0 | 32.4 | |

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119th St and State St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/12/2012

Page No : 7

Groups Printed- MU

| | State St From North | | | | 119th St From East | | | | State St From South | | | | 119th St From West | | | | |
|-------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | |

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119th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/12/2012
Page No : 8

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 119th St Crossing East Leg | | | State St Crossing South Leg | | | 119th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|-------------------------------|------|------------|--------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 2 | 7 | 9 | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 3 | 3 | 21 |
| 04:15 PM | 1 | 4 | 5 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 0 | 1 | 9 |
| 04:30 PM | 1 | 3 | 4 | 0 | 4 | 4 | 1 | 5 | 6 | 1 | 0 | 1 | 15 |
| 04:45 PM | 0 | 4 | 4 | 1 | 0 | 1 | 0 | 6 | 6 | 0 | 0 | 0 | 11 |
| Total | 4 | 18 | 22 | 1 | 7 | 8 | 1 | 20 | 21 | 2 | 3 | 5 | 56 |
| 05:00 PM | 0 | 7 | 7 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 2 | 2 | 13 |
| 05:15 PM | 0 | 3 | 3 | 1 | 0 | 1 | 0 | 7 | 7 | 0 | 0 | 0 | 11 |
| 05:30 PM | 0 | 1 | 1 | 0 | 2 | 2 | 1 | 8 | 9 | 0 | 0 | 0 | 12 |
| 05:45 PM | 1 | 8 | 9 | 0 | 3 | 3 | 1 | 7 | 8 | 0 | 1 | 1 | 21 |
| Total | 1 | 19 | 20 | 1 | 6 | 7 | 2 | 25 | 27 | 0 | 3 | 3 | 57 |
| Grand Total | 5 | 37 | 42 | 2 | 13 | 15 | 3 | 45 | 48 | 2 | 6 | 8 | 113 |
| Apprch % | 11.9 | 88.1 | | 13.3 | 86.7 | | 6.2 | 93.8 | | 25 | 75 | | |
| Total % | 4.4 | 32.7 | 37.2 | 1.8 | 11.5 | 13.3 | 2.7 | 39.8 | 42.5 | 1.8 | 5.3 | 7.1 | |

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119th St and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 2 | 3 | 10 | 4 | 27 | 1 | 32 | 1 | 10 | 7 | 18 | 7 | 39 | 3 | 49 | 109 |
| 07:15 AM | 9 | 8 | 4 | 21 | 1 | 40 | 0 | 41 | 6 | 26 | 4 | 36 | 2 | 45 | 7 | 54 | 152 |
| 07:30 AM | 4 | 6 | 0 | 10 | 5 | 34 | 1 | 40 | 6 | 19 | 6 | 31 | 2 | 62 | 11 | 75 | 156 |
| 07:45 AM | 11 | 10 | 0 | 21 | 11 | 47 | 1 | 59 | 4 | 23 | 9 | 36 | 3 | 61 | 11 | 75 | 191 |
| Total | 29 | 26 | 7 | 62 | 21 | 148 | 3 | 172 | 17 | 78 | 26 | 121 | 14 | 207 | 32 | 253 | 608 |
| 08:00 AM | 9 | 9 | 5 | 23 | 2 | 59 | 2 | 63 | 3 | 18 | 4 | 25 | 4 | 61 | 8 | 73 | 184 |
| 08:15 AM | 9 | 12 | 5 | 26 | 1 | 42 | 1 | 44 | 2 | 15 | 14 | 31 | 6 | 59 | 10 | 75 | 176 |
| 08:30 AM | 9 | 10 | 3 | 22 | 2 | 53 | 0 | 55 | 2 | 19 | 9 | 30 | 5 | 58 | 12 | 75 | 182 |
| 08:45 AM | 14 | 8 | 3 | 25 | 3 | 53 | 4 | 60 | 4 | 21 | 9 | 34 | 4 | 49 | 8 | 61 | 180 |
| Total | 41 | 39 | 16 | 96 | 8 | 207 | 7 | 222 | 11 | 73 | 36 | 120 | 19 | 227 | 38 | 284 | 722 |
| Grand Total | 70 | 65 | 23 | 158 | 29 | 355 | 10 | 394 | 28 | 151 | 62 | 241 | 33 | 434 | 70 | 537 | 1330 |
| Apprch % | 44.3 | 41.1 | 14.6 | | 7.4 | 90.1 | 2.5 | | 11.6 | 62.7 | 25.7 | | 6.1 | 80.8 | 13 | | |
| Total % | 5.3 | 4.9 | 1.7 | 11.9 | 2.2 | 26.7 | 0.8 | 29.6 | 2.1 | 11.4 | 4.7 | 18.1 | 2.5 | 32.6 | 5.3 | 40.4 | |
| PC | 69 | 64 | 22 | 155 | 26 | 333 | 10 | 369 | 28 | 150 | 61 | 239 | 32 | 405 | 70 | 507 | 1270 |
| % PC | 98.6 | 98.5 | 95.7 | 98.1 | 89.7 | 93.8 | 100 | 93.7 | 100 | 99.3 | 98.4 | 99.2 | 97 | 93.3 | 100 | 94.4 | 95.5 |
| SU | 1 | 1 | 1 | 3 | 3 | 21 | 0 | 24 | 0 | 1 | 1 | 2 | 1 | 27 | 0 | 28 | 57 |
| % SU | 1.4 | 1.5 | 4.3 | 1.9 | 10.3 | 5.9 | 0 | 6.1 | 0 | 0.7 | 1.6 | 0.8 | 3 | 6.2 | 0 | 5.2 | 4.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.4 | 0.2 |

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|--|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 11 | 10 | 0 | 21 | 11 | 47 | 1 | 59 | 4 | 23 | 9 | 36 | 3 | 61 | 11 | 75 | 191 |
| 08:00 AM | 9 | 9 | 5 | 23 | 2 | 59 | 2 | 63 | 3 | 18 | 4 | 25 | 4 | 61 | 8 | 73 | 184 |
| 08:15 AM | 9 | 12 | 5 | 26 | 1 | 42 | 1 | 44 | 2 | 15 | 14 | 31 | 6 | 59 | 10 | 75 | 176 |
| 08:30 AM | 9 | 10 | 3 | 22 | 2 | 53 | 0 | 55 | 2 | 19 | 9 | 30 | 5 | 58 | 12 | 75 | 182 |
| Total Volume | 38 | 41 | 13 | 92 | 16 | 201 | 4 | 221 | 11 | 75 | 36 | 122 | 18 | 239 | 41 | 298 | 733 |
| % App. Total | 41.3 | 44.6 | 14.1 | | 7.2 | 91 | 1.8 | | 9 | 61.5 | 29.5 | | 6 | 80.2 | 13.8 | | |
| PHF | .864 | .854 | .650 | .885 | .364 | .852 | .500 | .877 | .688 | .815 | .643 | .847 | .750 | .980 | .854 | .993 | .959 |

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773-283-2600 Fax: 773-283-2602

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119th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 4 | 8 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| 07:30 AM | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 8 |
| 07:45 AM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 10 |
| Total | 1 | 1 | 0 | 2 | 2 | 12 | 0 | 14 | 0 | 1 | 0 | 1 | 1 | 16 | 0 | 17 | 34 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 08:15 AM | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 6 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 8 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| Total | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 10 | 0 | 0 | 1 | 1 | 0 | 11 | 0 | 11 | 23 |
| Grand Total | 1 | 1 | 1 | 3 | 3 | 21 | 0 | 24 | 0 | 1 | 1 | 2 | 1 | 27 | 0 | 28 | 57 |
| Apprch % | 33.3 | 33.3 | 33.3 | | 12.5 | 87.5 | 0 | | 0 | 50 | 50 | | 3.6 | 96.4 | 0 | | |
| Total % | 1.8 | 1.8 | 1.8 | 5.3 | 5.3 | 36.8 | 0 | 42.1 | 0 | 1.8 | 1.8 | 3.5 | 1.8 | 47.4 | 0 | 49.1 | |

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119th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 66.7 | |

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119th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/5/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 119th St Crossing West Leg | | | Int. Total |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 1 | 1 | 5 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 8 | 8 | 0 | 1 | 1 | 10 |
| 07:30 AM | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 6 | 7 | 0 | 2 | 2 | 11 |
| 07:45 AM | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 4 |
| Total | 0 | 2 | 2 | 1 | 3 | 4 | 1 | 19 | 20 | 0 | 4 | 4 | 30 |
| 08:00 AM | 1 | 1 | 2 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 8 |
| 08:15 AM | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 9 |
| 08:30 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 12 |
| 08:45 AM | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 8 | 8 | 0 | 3 | 3 | 14 |
| Total | 2 | 9 | 11 | 0 | 8 | 8 | 0 | 19 | 19 | 0 | 5 | 5 | 43 |
| Grand Total | 2 | 11 | 13 | 1 | 11 | 12 | 1 | 38 | 39 | 0 | 9 | 9 | 73 |
| Apprch % | 15.4 | 84.6 | | 8.3 | 91.7 | | 2.6 | 97.4 | | 0 | 100 | | |
| Total % | 2.7 | 15.1 | 17.8 | 1.4 | 15.1 | 16.4 | 1.4 | 52.1 | 53.4 | 0 | 12.3 | 12.3 | |

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119th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 15 | 17 | 1 | 33 | 5 | 53 | 4 | 62 | 4 | 13 | 2 | 19 | 8 | 59 | 6 | 73 | 187 |
| 04:15 PM | 9 | 8 | 4 | 21 | 5 | 61 | 3 | 69 | 1 | 9 | 8 | 18 | 7 | 78 | 12 | 97 | 205 |
| 04:30 PM | 11 | 14 | 2 | 27 | 3 | 67 | 1 | 71 | 8 | 12 | 5 | 25 | 11 | 64 | 15 | 90 | 213 |
| 04:45 PM | 9 | 27 | 11 | 47 | 4 | 62 | 2 | 68 | 4 | 10 | 6 | 20 | 9 | 61 | 8 | 78 | 213 |
| Total | 44 | 66 | 18 | 128 | 17 | 243 | 10 | 270 | 17 | 44 | 21 | 82 | 35 | 262 | 41 | 338 | 818 |
| 05:00 PM | 13 | 20 | 6 | 39 | 4 | 67 | 4 | 75 | 3 | 16 | 11 | 30 | 18 | 74 | 11 | 103 | 247 |
| 05:15 PM | 15 | 19 | 6 | 40 | 8 | 55 | 2 | 65 | 2 | 9 | 9 | 20 | 14 | 77 | 11 | 102 | 227 |
| 05:30 PM | 18 | 12 | 3 | 33 | 5 | 76 | 2 | 83 | 7 | 12 | 6 | 25 | 11 | 53 | 7 | 71 | 212 |
| 05:45 PM | 12 | 25 | 3 | 40 | 2 | 53 | 3 | 58 | 5 | 14 | 6 | 25 | 11 | 71 | 6 | 88 | 211 |
| Total | 58 | 76 | 18 | 152 | 19 | 251 | 11 | 281 | 17 | 51 | 32 | 100 | 54 | 275 | 35 | 364 | 897 |
| Grand Total | 102 | 142 | 36 | 280 | 36 | 494 | 21 | 551 | 34 | 95 | 53 | 182 | 89 | 537 | 76 | 702 | 1715 |
| Apprch % | 36.4 | 50.7 | 12.9 | | 6.5 | 89.7 | 3.8 | | 18.7 | 52.2 | 29.1 | | 12.7 | 76.5 | 10.8 | | |
| Total % | 5.9 | 8.3 | 2.1 | 16.3 | 2.1 | 28.8 | 1.2 | 32.1 | 2 | 5.5 | 3.1 | 10.6 | 5.2 | 31.3 | 4.4 | 40.9 | |
| PC | 99 | 140 | 36 | 275 | 36 | 475 | 21 | 532 | 34 | 94 | 53 | 181 | 88 | 524 | 75 | 687 | 1675 |
| % PC | 97.1 | 98.6 | 100 | 98.2 | 100 | 96.2 | 100 | 96.6 | 100 | 98.9 | 100 | 99.5 | 98.9 | 97.6 | 98.7 | 97.9 | 97.7 |
| SU | 3 | 2 | 0 | 5 | 0 | 18 | 0 | 18 | 0 | 1 | 0 | 1 | 1 | 12 | 1 | 14 | 38 |
| % SU | 2.9 | 1.4 | 0 | 1.8 | 0 | 3.6 | 0 | 3.3 | 0 | 1.1 | 0 | 0.5 | 1.1 | 2.2 | 1.3 | 2 | 2.2 |
| MU | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.1 | 0.1 |

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|--|-----------------------------|-----------|-----------|------------|-----------------------|-----------|----------|------------|-----------------------------|-----------|-----------|------------|-----------------------|-----------|-----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 11 | 14 | 2 | 27 | 3 | 67 | 1 | 71 | 8 | 12 | 5 | 25 | 11 | 64 | 15 | 90 | 213 |
| 04:45 PM | 9 | 27 | 11 | 47 | 4 | 62 | 2 | 68 | 4 | 10 | 6 | 20 | 9 | 61 | 8 | 78 | 213 |
| 05:00 PM | 13 | 20 | 6 | 39 | 4 | 67 | 4 | 75 | 3 | 16 | 11 | 30 | 18 | 74 | 11 | 103 | 247 |
| 05:15 PM | 15 | 19 | 6 | 40 | 8 | 55 | 2 | 65 | 2 | 9 | 9 | 20 | 14 | 77 | 11 | 102 | 227 |
| Total Volume | 48 | 80 | 25 | 153 | 19 | 251 | 9 | 279 | 17 | 47 | 31 | 95 | 52 | 276 | 45 | 373 | 900 |
| % App. Total | 31.4 | 52.3 | 16.3 | | 6.8 | 90 | 3.2 | | 17.9 | 49.5 | 32.6 | | 13.9 | 74 | 12.1 | | |
| PHF | .800 | .741 | .568 | .814 | .594 | .937 | .563 | .930 | .531 | .734 | .705 | .792 | .722 | .896 | .750 | .905 | .911 |

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119th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 9 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 7 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 1 | 1 | 0 | 2 | 0 | 10 | 0 | 10 | 0 | 1 | 0 | 1 | 1 | 6 | 0 | 7 | 20 |
| 05:00 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 5 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 05:45 PM | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| Total | 2 | 1 | 0 | 3 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 18 |
| Grand Total | 3 | 2 | 0 | 5 | 0 | 18 | 0 | 18 | 0 | 1 | 0 | 1 | 1 | 12 | 1 | 14 | 38 |
| Apprch % | 60 | 40 | 0 | | 0 | 100 | 0 | | 0 | 100 | 0 | | 7.1 | 85.7 | 7.1 | | |
| Total % | 7.9 | 5.3 | 0 | 13.2 | 0 | 47.4 | 0 | 47.4 | 0 | 2.6 | 0 | 2.6 | 2.6 | 31.6 | 2.6 | 36.8 | |

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119th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 119th St From East | | | | Wentworth Ave From South | | | | 119th St From West | | | | |
|-------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|-----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | |

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119th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/5/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 119th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 119th St Crossing West Leg | | | Int. Total |
|-------------|-------------------------------------|------|------------|-------------------------------|------|------------|-------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 6 | 6 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 13 |
| 04:15 PM | 0 | 2 | 2 | 0 | 5 | 5 | 1 | 12 | 13 | 0 | 0 | 0 | 20 |
| 04:30 PM | 0 | 4 | 4 | 0 | 5 | 5 | 1 | 8 | 9 | 0 | 6 | 6 | 24 |
| 04:45 PM | 0 | 3 | 3 | 1 | 3 | 4 | 0 | 4 | 4 | 0 | 1 | 1 | 12 |
| Total | 0 | 15 | 15 | 1 | 17 | 18 | 2 | 24 | 26 | 0 | 10 | 10 | 69 |
| 05:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 7 |
| 05:15 PM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 3 | 3 | 14 |
| 05:30 PM | 0 | 7 | 7 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 1 | 1 | 12 |
| 05:45 PM | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 6 | 6 | 0 | 4 | 4 | 13 |
| Total | 1 | 12 | 13 | 1 | 2 | 3 | 2 | 20 | 22 | 0 | 8 | 8 | 46 |
| Grand Total | 1 | 27 | 28 | 2 | 19 | 21 | 4 | 44 | 48 | 0 | 18 | 18 | 115 |
| Apprch % | 3.6 | 96.4 | | 9.5 | 90.5 | | 8.3 | 91.7 | | 0 | 100 | | |
| Total % | 0.9 | 23.5 | 24.3 | 1.7 | 16.5 | 18.3 | 3.5 | 38.3 | 41.7 | 0 | 15.7 | 15.7 | |

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127th St and Ashland Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/23/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 14 | 19 | 7 | 40 | 6 | 130 | 18 | 154 | 13 | 35 | 60 | 108 | 45 | 89 | 35 | 169 | 471 |
| 07:15 AM | 23 | 17 | 7 | 47 | 16 | 153 | 15 | 184 | 11 | 45 | 62 | 118 | 51 | 124 | 32 | 207 | 556 |
| 07:30 AM | 21 | 18 | 5 | 44 | 9 | 182 | 12 | 203 | 12 | 47 | 57 | 116 | 52 | 119 | 26 | 197 | 560 |
| 07:45 AM | 31 | 32 | 9 | 72 | 6 | 183 | 23 | 212 | 5 | 38 | 51 | 94 | 36 | 94 | 29 | 159 | 537 |
| Total | 89 | 86 | 28 | 203 | 37 | 648 | 68 | 753 | 41 | 165 | 230 | 436 | 184 | 426 | 122 | 732 | 2124 |
| 08:00 AM | 18 | 29 | 8 | 55 | 13 | 145 | 18 | 176 | 7 | 43 | 51 | 101 | 57 | 77 | 21 | 155 | 487 |
| 08:15 AM | 21 | 32 | 15 | 68 | 10 | 173 | 18 | 201 | 16 | 50 | 67 | 133 | 59 | 115 | 19 | 193 | 595 |
| 08:30 AM | 23 | 29 | 10 | 62 | 5 | 179 | 31 | 215 | 15 | 30 | 38 | 83 | 62 | 129 | 16 | 207 | 567 |
| 08:45 AM | 23 | 22 | 8 | 53 | 12 | 145 | 25 | 182 | 12 | 37 | 65 | 114 | 56 | 98 | 20 | 174 | 523 |
| Total | 85 | 112 | 41 | 238 | 40 | 642 | 92 | 774 | 50 | 160 | 221 | 431 | 234 | 419 | 76 | 729 | 2172 |
| Grand Total | 174 | 198 | 69 | 441 | 77 | 1290 | 160 | 1527 | 91 | 325 | 451 | 867 | 418 | 845 | 198 | 1461 | 4296 |
| Apprch % | 39.5 | 44.9 | 15.6 | | 5 | 84.5 | 10.5 | | 10.5 | 37.5 | 52 | | 28.6 | 57.8 | 13.6 | | |
| Total % | 4.1 | 4.6 | 1.6 | 10.3 | 1.8 | 30 | 3.7 | 35.5 | 2.1 | 7.6 | 10.5 | 20.2 | 9.7 | 19.7 | 4.6 | 34 | |
| PC | 165 | 184 | 67 | 416 | 73 | 1226 | 157 | 1456 | 84 | 310 | 406 | 800 | 392 | 780 | 192 | 1364 | 4036 |
| % PC | 94.8 | 92.9 | 97.1 | 94.3 | 94.8 | 95 | 98.1 | 95.4 | 92.3 | 95.4 | 90 | 92.3 | 93.8 | 92.3 | 97 | 93.4 | 93.9 |
| SU | 7 | 11 | 2 | 20 | 4 | 42 | 2 | 48 | 7 | 13 | 34 | 54 | 21 | 37 | 5 | 63 | 185 |
| % SU | 4 | 5.6 | 2.9 | 4.5 | 5.2 | 3.3 | 1.2 | 3.1 | 7.7 | 4 | 7.5 | 6.2 | 5 | 4.4 | 2.5 | 4.3 | 4.3 |
| MU | 2 | 3 | 0 | 5 | 0 | 22 | 1 | 23 | 0 | 2 | 11 | 13 | 5 | 28 | 1 | 34 | 75 |
| % MU | 1.1 | 1.5 | 0 | 1.1 | 0 | 1.7 | 0.6 | 1.5 | 0 | 0.6 | 2.4 | 1.5 | 1.2 | 3.3 | 0.5 | 2.3 | 1.7 |

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 31 | 32 | 9 | 72 | 6 | 183 | 23 | 212 | 5 | 38 | 51 | 94 | 36 | 94 | 29 | 159 | 537 |
| 08:00 AM | 18 | 29 | 8 | 55 | 13 | 145 | 18 | 176 | 7 | 43 | 51 | 101 | 57 | 77 | 21 | 155 | 487 |
| 08:15 AM | 21 | 32 | 15 | 68 | 10 | 173 | 18 | 201 | 16 | 50 | 67 | 133 | 59 | 115 | 19 | 193 | 595 |
| 08:30 AM | 23 | 29 | 10 | 62 | 5 | 179 | 31 | 215 | 15 | 30 | 38 | 83 | 62 | 129 | 16 | 207 | 567 |
| Total Volume | 93 | 122 | 42 | 257 | 34 | 680 | 90 | 804 | 43 | 161 | 207 | 411 | 214 | 415 | 85 | 714 | 2186 |
| % App. Total | 36.2 | 47.5 | 16.3 | | 4.2 | 84.6 | 11.2 | | 10.5 | 39.2 | 50.4 | | 30 | 58.1 | 11.9 | | |
| PHF | .750 | .953 | .700 | .892 | .654 | .929 | .726 | .935 | .672 | .805 | .772 | .773 | .863 | .804 | .733 | .862 | .918 |

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127th St and Ashland Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 2

Groups Printed- SU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 3 | 3 | 2 | 8 | 3 | 6 | 0 | 9 | 23 |
| 07:15 AM | 3 | 1 | 0 | 4 | 0 | 6 | 0 | 6 | 2 | 4 | 9 | 15 | 3 | 7 | 0 | 10 | 35 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 1 | 0 | 3 | 4 | 5 | 7 | 0 | 12 | 24 |
| 07:45 AM | 1 | 5 | 0 | 6 | 0 | 4 | 0 | 4 | 0 | 3 | 2 | 5 | 0 | 2 | 1 | 3 | 18 |
| Total | 4 | 6 | 0 | 10 | 0 | 23 | 1 | 24 | 6 | 10 | 16 | 32 | 11 | 22 | 1 | 34 | 100 |
| 08:00 AM | 0 | 2 | 0 | 2 | 1 | 4 | 1 | 6 | 0 | 0 | 4 | 4 | 3 | 2 | 0 | 5 | 17 |
| 08:15 AM | 2 | 0 | 1 | 3 | 0 | 5 | 0 | 5 | 0 | 1 | 6 | 7 | 1 | 6 | 0 | 7 | 22 |
| 08:30 AM | 1 | 1 | 1 | 3 | 0 | 6 | 0 | 6 | 0 | 0 | 3 | 3 | 2 | 4 | 1 | 7 | 19 |
| 08:45 AM | 0 | 2 | 0 | 2 | 3 | 4 | 0 | 7 | 1 | 2 | 5 | 8 | 4 | 3 | 3 | 10 | 27 |
| Total | 3 | 5 | 2 | 10 | 4 | 19 | 1 | 24 | 1 | 3 | 18 | 22 | 10 | 15 | 4 | 29 | 85 |
| Grand Total | 7 | 11 | 2 | 20 | 4 | 42 | 2 | 48 | 7 | 13 | 34 | 54 | 21 | 37 | 5 | 63 | 185 |
| Apprch % | 35 | 55 | 10 | | 8.3 | 87.5 | 4.2 | | 13 | 24.1 | 63 | | 33.3 | 58.7 | 7.9 | | |
| Total % | 3.8 | 5.9 | 1.1 | 10.8 | 2.2 | 22.7 | 1.1 | 25.9 | 3.8 | 7 | 18.4 | 29.2 | 11.4 | 20 | 2.7 | 34.1 | |

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127th St and Ashland Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 3

Groups Printed- MU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 3 | 9 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 3 | 0 | 4 | 6 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 5 | 1 | 6 | 0 | 0 | 3 | 3 | 1 | 7 | 0 | 8 | 18 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 7 |
| Total | 0 | 1 | 0 | 1 | 0 | 12 | 1 | 13 | 0 | 1 | 6 | 7 | 3 | 15 | 1 | 19 | 40 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 4 | 9 |
| 08:15 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 2 | 0 | 3 | 7 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 6 |
| 08:45 AM | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 1 | 5 | 0 | 6 | 13 |
| Total | 2 | 2 | 0 | 4 | 0 | 10 | 0 | 10 | 0 | 1 | 5 | 6 | 2 | 13 | 0 | 15 | 35 |
| Grand Total | 2 | 3 | 0 | 5 | 0 | 22 | 1 | 23 | 0 | 2 | 11 | 13 | 5 | 28 | 1 | 34 | 75 |
| Apprch % | 40 | 60 | 0 | | 0 | 95.7 | 4.3 | | 0 | 15.4 | 84.6 | | 14.7 | 82.4 | 2.9 | | |
| Total % | 2.7 | 4 | 0 | 6.7 | 0 | 29.3 | 1.3 | 30.7 | 0 | 2.7 | 14.7 | 17.3 | 6.7 | 37.3 | 1.3 | 45.3 | |

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127th St and Ashland Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/23/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Ashland Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Ashland Ave Crossing South Leg | | | 127th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 4 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 7 |
| 07:45 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 5 |
| Total | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 7 | 7 | 0 | 5 | 5 | 16 |
| 08:00 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 4 | 4 | 0 | 1 | 1 | 8 |
| 08:15 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 4 | 10 |
| 08:30 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 4 |
| 08:45 AM | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 0 | 0 | 8 |
| Total | 0 | 5 | 5 | 0 | 6 | 6 | 0 | 11 | 11 | 0 | 8 | 8 | 30 |
| Grand Total | 0 | 6 | 6 | 0 | 9 | 9 | 0 | 18 | 18 | 0 | 13 | 13 | 46 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 13 | 13 | 0 | 19.6 | 19.6 | 0 | 39.1 | 39.1 | 0 | 28.3 | 28.3 | |

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127th St and Ashland Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/23/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 31 | 48 | 20 | 99 | 14 | 170 | 26 | 210 | 14 | 56 | 70 | 140 | 90 | 153 | 36 | 279 | 728 |
| 04:15 PM | 18 | 50 | 13 | 81 | 17 | 193 | 22 | 232 | 15 | 43 | 79 | 137 | 98 | 165 | 20 | 283 | 733 |
| 04:30 PM | 20 | 27 | 22 | 69 | 9 | 173 | 20 | 202 | 21 | 38 | 74 | 133 | 93 | 156 | 20 | 269 | 673 |
| 04:45 PM | 19 | 28 | 14 | 61 | 16 | 164 | 28 | 208 | 20 | 40 | 49 | 109 | 116 | 161 | 38 | 315 | 693 |
| Total | 88 | 153 | 69 | 310 | 56 | 700 | 96 | 852 | 70 | 177 | 272 | 519 | 397 | 635 | 114 | 1146 | 2827 |
| 05:00 PM | 23 | 39 | 19 | 81 | 11 | 157 | 33 | 201 | 11 | 37 | 52 | 100 | 80 | 146 | 25 | 251 | 633 |
| 05:15 PM | 34 | 42 | 17 | 93 | 9 | 136 | 26 | 171 | 23 | 42 | 56 | 121 | 114 | 164 | 27 | 305 | 690 |
| 05:30 PM | 31 | 44 | 23 | 98 | 14 | 149 | 19 | 182 | 12 | 43 | 56 | 111 | 90 | 146 | 31 | 267 | 658 |
| 05:45 PM | 33 | 37 | 15 | 85 | 14 | 122 | 16 | 152 | 20 | 57 | 63 | 140 | 84 | 115 | 39 | 238 | 615 |
| Total | 121 | 162 | 74 | 357 | 48 | 564 | 94 | 706 | 66 | 179 | 227 | 472 | 368 | 571 | 122 | 1061 | 2596 |
| Grand Total | 209 | 315 | 143 | 667 | 104 | 1264 | 190 | 1558 | 136 | 356 | 499 | 991 | 765 | 1206 | 236 | 2207 | 5423 |
| Apprch % | 31.3 | 47.2 | 21.4 | | 6.7 | 81.1 | 12.2 | | 13.7 | 35.9 | 50.4 | | 34.7 | 54.6 | 10.7 | | |
| Total % | 3.9 | 5.8 | 2.6 | 12.3 | 1.9 | 23.3 | 3.5 | 28.7 | 2.5 | 6.6 | 9.2 | 18.3 | 14.1 | 22.2 | 4.4 | 40.7 | |
| PC | 208 | 314 | 141 | 663 | 102 | 1227 | 187 | 1516 | 133 | 350 | 489 | 972 | 745 | 1189 | 230 | 2164 | 5315 |
| % PC | 99.5 | 99.7 | 98.6 | 99.4 | 98.1 | 97.1 | 98.4 | 97.3 | 97.8 | 98.3 | 98 | 98.1 | 97.4 | 98.6 | 97.5 | 98.1 | 98 |
| SU | 0 | 1 | 2 | 3 | 1 | 29 | 3 | 33 | 2 | 4 | 7 | 13 | 13 | 8 | 3 | 24 | 73 |
| % SU | 0 | 0.3 | 1.4 | 0.4 | 1 | 2.3 | 1.6 | 2.1 | 1.5 | 1.1 | 1.4 | 1.3 | 1.7 | 0.7 | 1.3 | 1.1 | 1.3 |
| MU | 1 | 0 | 0 | 1 | 1 | 8 | 0 | 9 | 1 | 2 | 3 | 6 | 7 | 9 | 3 | 19 | 35 |
| % MU | 0.5 | 0 | 0 | 0.1 | 1 | 0.6 | 0 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.9 | 0.7 | 1.3 | 0.9 | 0.6 |

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 31 | 48 | 20 | 99 | 14 | 170 | 26 | 210 | 14 | 56 | 70 | 140 | 90 | 153 | 36 | 279 | 728 |
| 04:15 PM | 18 | 50 | 13 | 81 | 17 | 193 | 22 | 232 | 15 | 43 | 79 | 137 | 98 | 165 | 20 | 283 | 733 |
| 04:30 PM | 20 | 27 | 22 | 69 | 9 | 173 | 20 | 202 | 21 | 38 | 74 | 133 | 93 | 156 | 20 | 269 | 673 |
| 04:45 PM | 19 | 28 | 14 | 61 | 16 | 164 | 28 | 208 | 20 | 40 | 49 | 109 | 116 | 161 | 38 | 315 | 693 |
| Total Volume | 88 | 153 | 69 | 310 | 56 | 700 | 96 | 852 | 70 | 177 | 272 | 519 | 397 | 635 | 114 | 1146 | 2827 |
| % App. Total | 28.4 | 49.4 | 22.3 | | 6.6 | 82.2 | 11.3 | | 13.5 | 34.1 | 52.4 | | 34.6 | 55.4 | 9.9 | | |
| PHF | .710 | .765 | .784 | .783 | .824 | .907 | .857 | .918 | .833 | .790 | .861 | .927 | .856 | .962 | .750 | .910 | .964 |

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127th St and Ashland Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 6

Groups Printed- SU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 1 | 2 | 1 | 4 | 2 | 3 | 1 | 6 | 14 |
| 04:15 PM | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 10 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 3 | 1 | 1 | 5 | 10 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 6 |
| Total | 0 | 1 | 0 | 1 | 1 | 15 | 0 | 16 | 1 | 4 | 4 | 9 | 7 | 5 | 2 | 14 | 40 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 7 | 0 | 0 | 3 | 3 | 2 | 2 | 0 | 4 | 14 |
| 05:15 PM | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 5 | 11 |
| 05:45 PM | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 |
| Total | 0 | 0 | 2 | 2 | 0 | 14 | 3 | 17 | 1 | 0 | 3 | 4 | 6 | 3 | 1 | 10 | 33 |
| Grand Total | 0 | 1 | 2 | 3 | 1 | 29 | 3 | 33 | 2 | 4 | 7 | 13 | 13 | 8 | 3 | 24 | 73 |
| Apprch % | 0 | 33.3 | 66.7 | | 3 | 87.9 | 9.1 | | 15.4 | 30.8 | 53.8 | | 54.2 | 33.3 | 12.5 | | |
| Total % | 0 | 1.4 | 2.7 | 4.1 | 1.4 | 39.7 | 4.1 | 45.2 | 2.7 | 5.5 | 9.6 | 17.8 | 17.8 | 11 | 4.1 | 32.9 | |

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127th St and Ashland Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 7

Groups Printed- MU

| | Ashland Ave From North | | | | 127th St From East | | | | Ashland Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 | 3 | 0 | 0 | 1 | 1 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 2 | 6 |
| 04:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 5 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 5 | 6 |
| Total | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 1 | 1 | 3 | 5 | 3 | 6 | 2 | 11 | 22 |
| 05:00 PM | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 3 | 5 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 3 |
| Total | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 4 | 3 | 1 | 8 | 13 |
| Grand Total | 1 | 0 | 0 | 1 | 1 | 8 | 0 | 9 | 1 | 2 | 3 | 6 | 7 | 9 | 3 | 19 | 35 |
| Apprch % | 100 | 0 | 0 | | 11.1 | 88.9 | 0 | | 16.7 | 33.3 | 50 | | 36.8 | 47.4 | 15.8 | | |
| Total % | 2.9 | 0 | 0 | 2.9 | 2.9 | 22.9 | 0 | 25.7 | 2.9 | 5.7 | 8.6 | 17.1 | 20 | 25.7 | 8.6 | 54.3 | |

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127th St and Ashland Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/23/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Ashland Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Ashland Ave Crossing South Leg | | | 127th St Crossing West Leg | | | Int. Total |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 1 | 1 | 13 |
| 04:15 PM | 0 | 3 | 3 | 0 | 6 | 6 | 0 | 13 | 13 | 0 | 1 | 1 | 23 |
| 04:30 PM | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 6 | 6 | 13 |
| 04:45 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 2 | 7 |
| Total | 1 | 10 | 11 | 0 | 9 | 9 | 0 | 26 | 26 | 0 | 10 | 10 | 56 |
| 05:00 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 5 | 5 | 0 | 3 | 3 | 11 |
| 05:15 PM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 1 | 1 | 11 |
| 05:30 PM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 8 |
| 05:45 PM | 0 | 6 | 6 | 1 | 3 | 4 | 0 | 11 | 11 | 0 | 4 | 4 | 25 |
| Total | 0 | 11 | 11 | 1 | 12 | 13 | 0 | 23 | 23 | 0 | 8 | 8 | 55 |
| Grand Total | 1 | 21 | 22 | 1 | 21 | 22 | 0 | 49 | 49 | 0 | 18 | 18 | 111 |
| Apprch % | 4.5 | 95.5 | | 4.5 | 95.5 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0.9 | 18.9 | 19.8 | 0.9 | 18.9 | 19.8 | 0 | 44.1 | 44.1 | 0 | 16.2 | 16.2 | |

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127th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 19 | 33 | 17 | 69 | 18 | 77 | 1 | 96 | 2 | 107 | 26 | 135 | 12 | 61 | 20 | 93 | 393 |
| 07:15 AM | 19 | 45 | 14 | 78 | 21 | 84 | 0 | 105 | 0 | 127 | 13 | 140 | 10 | 95 | 50 | 155 | 478 |
| 07:30 AM | 20 | 52 | 15 | 87 | 23 | 106 | 0 | 129 | 3 | 120 | 14 | 137 | 20 | 74 | 46 | 140 | 493 |
| 07:45 AM | 23 | 57 | 15 | 95 | 25 | 102 | 1 | 128 | 1 | 141 | 11 | 153 | 29 | 115 | 52 | 196 | 572 |
| Total | 81 | 187 | 61 | 329 | 87 | 369 | 2 | 458 | 6 | 495 | 64 | 565 | 71 | 345 | 168 | 584 | 1936 |
| 08:00 AM | 20 | 72 | 22 | 114 | 20 | 87 | 3 | 110 | 1 | 97 | 15 | 113 | 14 | 99 | 25 | 138 | 475 |
| 08:15 AM | 18 | 70 | 13 | 101 | 32 | 77 | 2 | 111 | 1 | 132 | 16 | 149 | 10 | 71 | 28 | 109 | 470 |
| 08:30 AM | 37 | 69 | 18 | 124 | 29 | 70 | 4 | 103 | 2 | 104 | 16 | 122 | 12 | 92 | 16 | 120 | 469 |
| 08:45 AM | 22 | 90 | 14 | 126 | 20 | 72 | 0 | 92 | 9 | 111 | 16 | 136 | 13 | 84 | 26 | 123 | 477 |
| Total | 97 | 301 | 67 | 465 | 101 | 306 | 9 | 416 | 13 | 444 | 63 | 520 | 49 | 346 | 95 | 490 | 1891 |
| Grand Total | 178 | 488 | 128 | 794 | 188 | 675 | 11 | 874 | 19 | 939 | 127 | 1085 | 120 | 691 | 263 | 1074 | 3827 |
| Apprch % | 22.4 | 61.5 | 16.1 | | 21.5 | 77.2 | 1.3 | | 1.8 | 86.5 | 11.7 | | 11.2 | 64.3 | 24.5 | | |
| Total % | 4.7 | 12.8 | 3.3 | 20.7 | 4.9 | 17.6 | 0.3 | 22.8 | 0.5 | 24.5 | 3.3 | 28.4 | 3.1 | 18.1 | 6.9 | 28.1 | |
| PC | 173 | 451 | 121 | 745 | 173 | 639 | 5 | 817 | 12 | 900 | 118 | 1030 | 103 | 649 | 253 | 1005 | 3597 |
| % PC | 97.2 | 92.4 | 94.5 | 93.8 | 92 | 94.7 | 45.5 | 93.5 | 63.2 | 95.8 | 92.9 | 94.9 | 85.8 | 93.9 | 96.2 | 93.6 | 94 |
| SU | 4 | 35 | 5 | 44 | 13 | 22 | 1 | 36 | 0 | 31 | 7 | 38 | 8 | 24 | 7 | 39 | 157 |
| % SU | 2.2 | 7.2 | 3.9 | 5.5 | 6.9 | 3.3 | 9.1 | 4.1 | 0 | 3.3 | 5.5 | 3.5 | 6.7 | 3.5 | 2.7 | 3.6 | 4.1 |
| MU | 1 | 2 | 2 | 5 | 2 | 14 | 5 | 21 | 7 | 8 | 2 | 17 | 9 | 18 | 3 | 30 | 73 |
| % MU | 0.6 | 0.4 | 1.6 | 0.6 | 1.1 | 2.1 | 45.5 | 2.4 | 36.8 | 0.9 | 1.6 | 1.6 | 7.5 | 2.6 | 1.1 | 2.8 | 1.9 |

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 19 | 45 | 14 | 78 | 21 | 84 | 0 | 105 | 0 | 127 | 13 | 140 | 10 | 95 | 50 | 155 | 478 |
| 07:30 AM | 20 | 52 | 15 | 87 | 23 | 106 | 0 | 129 | 3 | 120 | 14 | 137 | 20 | 74 | 46 | 140 | 493 |
| 07:45 AM | 23 | 57 | 15 | 95 | 25 | 102 | 1 | 128 | 1 | 141 | 11 | 153 | 29 | 115 | 52 | 196 | 572 |
| 08:00 AM | 20 | 72 | 22 | 114 | 20 | 87 | 3 | 110 | 1 | 97 | 15 | 113 | 14 | 99 | 25 | 138 | 475 |
| Total Volume | 82 | 226 | 66 | 374 | 89 | 379 | 4 | 472 | 5 | 485 | 53 | 543 | 73 | 383 | 173 | 629 | 2018 |
| % App. Total | 21.9 | 60.4 | 17.6 | | 18.9 | 80.3 | 0.8 | | 0.9 | 89.3 | 9.8 | | 11.6 | 60.9 | 27.5 | | |
| PHF | .891 | .785 | .750 | .820 | .890 | .894 | .333 | .915 | .417 | .860 | .883 | .887 | .629 | .833 | .832 | .802 | .882 |

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127th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 2

Groups Printed- SU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 1 | 3 | 1 | 2 | 0 | 3 | 0 | 6 | 2 | 8 | 0 | 5 | 1 | 6 | 20 |
| 07:15 AM | 1 | 5 | 1 | 7 | 4 | 2 | 0 | 6 | 0 | 3 | 2 | 5 | 1 | 2 | 1 | 4 | 22 |
| 07:30 AM | 1 | 4 | 0 | 5 | 1 | 2 | 0 | 3 | 0 | 5 | 0 | 5 | 2 | 0 | 1 | 3 | 16 |
| 07:45 AM | 0 | 4 | 1 | 5 | 1 | 5 | 0 | 6 | 0 | 2 | 1 | 3 | 3 | 3 | 1 | 7 | 21 |
| Total | 2 | 15 | 3 | 20 | 7 | 11 | 0 | 18 | 0 | 16 | 5 | 21 | 6 | 10 | 4 | 20 | 79 |
| 08:00 AM | 0 | 4 | 1 | 5 | 2 | 4 | 0 | 6 | 0 | 3 | 1 | 4 | 2 | 5 | 0 | 7 | 22 |
| 08:15 AM | 1 | 5 | 0 | 6 | 2 | 4 | 1 | 7 | 0 | 5 | 0 | 5 | 0 | 3 | 0 | 3 | 21 |
| 08:30 AM | 1 | 5 | 0 | 6 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 15 |
| 08:45 AM | 0 | 6 | 1 | 7 | 1 | 1 | 0 | 2 | 0 | 4 | 1 | 5 | 0 | 3 | 3 | 6 | 20 |
| Total | 2 | 20 | 2 | 24 | 6 | 11 | 1 | 18 | 0 | 15 | 2 | 17 | 2 | 14 | 3 | 19 | 78 |
| Grand Total | 4 | 35 | 5 | 44 | 13 | 22 | 1 | 36 | 0 | 31 | 7 | 38 | 8 | 24 | 7 | 39 | 157 |
| Apprch % | 9.1 | 79.5 | 11.4 | | 36.1 | 61.1 | 2.8 | | 0 | 81.6 | 18.4 | | 20.5 | 61.5 | 17.9 | | |
| Total % | 2.5 | 22.3 | 3.2 | 28 | 8.3 | 14 | 0.6 | 22.9 | 0 | 19.7 | 4.5 | 24.2 | 5.1 | 15.3 | 4.5 | 24.8 | |

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127th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 3

Groups Printed- MU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 3 | 6 |
| 07:15 AM | 1 | 0 | 0 | 1 | 1 | 4 | 0 | 5 | 0 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 10 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 1 | 3 | 2 | 3 | 1 | 6 | 10 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 5 | 0 | 7 | 11 |
| Total | 1 | 0 | 0 | 1 | 1 | 7 | 1 | 9 | 4 | 4 | 1 | 9 | 6 | 10 | 2 | 18 | 37 |
| 08:00 AM | 0 | 1 | 1 | 2 | 0 | 4 | 1 | 5 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 10 |
| 08:15 AM | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 4 | 7 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 5 | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 3 | 10 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 3 | 1 | 0 | 4 | 1 | 2 | 0 | 3 | 9 |
| Total | 0 | 2 | 2 | 4 | 1 | 7 | 4 | 12 | 3 | 4 | 1 | 8 | 3 | 8 | 1 | 12 | 36 |
| Grand Total | 1 | 2 | 2 | 5 | 2 | 14 | 5 | 21 | 7 | 8 | 2 | 17 | 9 | 18 | 3 | 30 | 73 |
| Apprch % | 20 | 40 | 40 | | 9.5 | 66.7 | 23.8 | | 41.2 | 47.1 | 11.8 | | 30 | 60 | 10 | | |
| Total % | 1.4 | 2.7 | 2.7 | 6.8 | 2.7 | 19.2 | 6.8 | 28.8 | 9.6 | 11 | 2.7 | 23.3 | 12.3 | 24.7 | 4.1 | 41.1 | |

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127th St and Halsted Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/16/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 127th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 3 | 3 | 0 | 3 | 3 | 13 |
| 07:15 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 2 | 2 | 6 |
| 07:30 AM | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 4 | 4 | 13 |
| 07:45 AM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 8 |
| Total | 0 | 7 | 7 | 0 | 15 | 15 | 0 | 7 | 7 | 0 | 11 | 11 | 40 |
| 08:00 AM | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 3 | 3 | 12 |
| 08:15 AM | 0 | 2 | 2 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 2 | 2 | 12 |
| 08:30 AM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 2 | 2 | 8 |
| 08:45 AM | 0 | 3 | 3 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 4 | 4 | 12 |
| Total | 0 | 7 | 7 | 0 | 14 | 14 | 0 | 12 | 12 | 0 | 11 | 11 | 44 |
| Grand Total | 0 | 14 | 14 | 0 | 29 | 29 | 0 | 19 | 19 | 0 | 22 | 22 | 84 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 16.7 | 16.7 | 0 | 34.5 | 34.5 | 0 | 22.6 | 22.6 | 0 | 26.2 | 26.2 | |

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127th St and Halsted Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/16/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 38 | 106 | 23 | 167 | 23 | 101 | 6 | 130 | 3 | 84 | 25 | 112 | 18 | 108 | 24 | 150 | 559 |
| 04:15 PM | 33 | 114 | 38 | 185 | 18 | 76 | 3 | 97 | 3 | 78 | 23 | 104 | 27 | 121 | 33 | 181 | 567 |
| 04:30 PM | 47 | 113 | 34 | 194 | 13 | 67 | 2 | 82 | 3 | 61 | 19 | 83 | 31 | 127 | 43 | 201 | 560 |
| 04:45 PM | 34 | 125 | 33 | 192 | 8 | 84 | 1 | 93 | 1 | 60 | 12 | 73 | 31 | 101 | 27 | 159 | 517 |
| Total | 152 | 458 | 128 | 738 | 62 | 328 | 12 | 402 | 10 | 283 | 79 | 372 | 107 | 457 | 127 | 691 | 2203 |
| 05:00 PM | 34 | 104 | 38 | 176 | 11 | 77 | 2 | 90 | 2 | 54 | 26 | 82 | 18 | 125 | 18 | 161 | 509 |
| 05:15 PM | 47 | 120 | 39 | 206 | 16 | 114 | 2 | 132 | 3 | 73 | 20 | 96 | 22 | 138 | 17 | 177 | 611 |
| 05:30 PM | 27 | 126 | 37 | 190 | 16 | 97 | 3 | 116 | 1 | 50 | 26 | 77 | 40 | 123 | 30 | 193 | 576 |
| 05:45 PM | 33 | 119 | 39 | 191 | 23 | 88 | 3 | 114 | 3 | 82 | 22 | 107 | 35 | 105 | 21 | 161 | 573 |
| Total | 141 | 469 | 153 | 763 | 66 | 376 | 10 | 452 | 9 | 259 | 94 | 362 | 115 | 491 | 86 | 692 | 2269 |
| Grand Total | 293 | 927 | 281 | 1501 | 128 | 704 | 22 | 854 | 19 | 542 | 173 | 734 | 222 | 948 | 213 | 1383 | 4472 |
| Apprch % | 19.5 | 61.8 | 18.7 | | 15 | 82.4 | 2.6 | | 2.6 | 73.8 | 23.6 | | 16.1 | 68.5 | 15.4 | | |
| Total % | 6.6 | 20.7 | 6.3 | 33.6 | 2.9 | 15.7 | 0.5 | 19.1 | 0.4 | 12.1 | 3.9 | 16.4 | 5 | 21.2 | 4.8 | 30.9 | |
| PC | 285 | 893 | 277 | 1455 | 115 | 691 | 22 | 828 | 19 | 531 | 160 | 710 | 209 | 923 | 210 | 1342 | 4335 |
| % PC | 97.3 | 96.3 | 98.6 | 96.9 | 89.8 | 98.2 | 100 | 97 | 100 | 98 | 92.5 | 96.7 | 94.1 | 97.4 | 98.6 | 97 | 96.9 |
| SU | 8 | 32 | 3 | 43 | 13 | 8 | 0 | 21 | 0 | 9 | 4 | 13 | 8 | 16 | 3 | 27 | 104 |
| % SU | 2.7 | 3.5 | 1.1 | 2.9 | 10.2 | 1.1 | 0 | 2.5 | 0 | 1.7 | 2.3 | 1.8 | 3.6 | 1.7 | 1.4 | 2 | 2.3 |
| MU | 0 | 2 | 1 | 3 | 0 | 5 | 0 | 5 | 0 | 2 | 9 | 11 | 5 | 9 | 0 | 14 | 33 |
| % MU | 0 | 0.2 | 0.4 | 0.2 | 0 | 0.7 | 0 | 0.6 | 0 | 0.4 | 5.2 | 1.5 | 2.3 | 0.9 | 0 | 1 | 0.7 |

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 34 | 104 | 38 | 176 | 11 | 77 | 2 | 90 | 2 | 54 | 26 | 82 | 18 | 125 | 18 | 161 | 509 |
| 05:15 PM | 47 | 120 | 39 | 206 | 16 | 114 | 2 | 132 | 3 | 73 | 20 | 96 | 22 | 138 | 17 | 177 | 611 |
| 05:30 PM | 27 | 126 | 37 | 190 | 16 | 97 | 3 | 116 | 1 | 50 | 26 | 77 | 40 | 123 | 30 | 193 | 576 |
| 05:45 PM | 33 | 119 | 39 | 191 | 23 | 88 | 3 | 114 | 3 | 82 | 22 | 107 | 35 | 105 | 21 | 161 | 573 |
| Total Volume | 141 | 469 | 153 | 763 | 66 | 376 | 10 | 452 | 9 | 259 | 94 | 362 | 115 | 491 | 86 | 692 | 2269 |
| % App. Total | 18.5 | 61.5 | 20.1 | | 14.6 | 83.2 | 2.2 | | 2.5 | 71.5 | 26 | | 16.6 | 71 | 12.4 | | |
| PHF | .750 | .931 | .981 | .926 | .717 | .825 | .833 | .856 | .750 | .790 | .904 | .846 | .719 | .889 | .717 | .896 | .928 |

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127th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 6

Groups Printed- SU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 5 | 2 | 9 | 2 | 1 | 0 | 3 | 0 | 2 | 2 | 4 | 0 | 2 | 2 | 4 | 20 |
| 04:15 PM | 0 | 3 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 3 | 2 | 0 | 5 | 12 |
| 04:30 PM | 2 | 2 | 1 | 5 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 13 |
| 04:45 PM | 0 | 6 | 0 | 6 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 12 |
| Total | 4 | 16 | 3 | 23 | 9 | 3 | 0 | 12 | 0 | 4 | 2 | 6 | 6 | 8 | 2 | 16 | 57 |
| 05:00 PM | 1 | 4 | 0 | 5 | 1 | 3 | 0 | 4 | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 13 |
| 05:15 PM | 1 | 5 | 0 | 6 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 12 |
| 05:30 PM | 0 | 5 | 0 | 5 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 1 | 3 | 12 |
| 05:45 PM | 2 | 2 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 4 | 10 |
| Total | 4 | 16 | 0 | 20 | 4 | 5 | 0 | 9 | 0 | 5 | 2 | 7 | 2 | 8 | 1 | 11 | 47 |
| Grand Total | 8 | 32 | 3 | 43 | 13 | 8 | 0 | 21 | 0 | 9 | 4 | 13 | 8 | 16 | 3 | 27 | 104 |
| Apprch % | 18.6 | 74.4 | 7 | | 61.9 | 38.1 | 0 | | 0 | 69.2 | 30.8 | | 29.6 | 59.3 | 11.1 | | |
| Total % | 7.7 | 30.8 | 2.9 | 41.3 | 12.5 | 7.7 | 0 | 20.2 | 0 | 8.7 | 3.8 | 12.5 | 7.7 | 15.4 | 2.9 | 26 | |

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127th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/16/2012

Page No : 7

Groups Printed- MU

| | Halsted Ave From North | | | | 127th St From East | | | | Halsted Ave From South | | | | 127th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 3 | 1 | 0 | 0 | 1 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 7 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 2 | 0 | 3 | 6 |
| 04:45 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 7 |
| Total | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 2 | 5 | 7 | 5 | 7 | 0 | 12 | 25 |
| 05:00 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 1 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 2 | 8 |
| Grand Total | 0 | 2 | 1 | 3 | 0 | 5 | 0 | 5 | 0 | 2 | 9 | 11 | 5 | 9 | 0 | 14 | 33 |
| Apprch % | 0 | 66.7 | 33.3 | | 0 | 100 | 0 | | 0 | 18.2 | 81.8 | | 35.7 | 64.3 | 0 | | |
| Total % | 0 | 6.1 | 3 | 9.1 | 0 | 15.2 | 0 | 15.2 | 0 | 6.1 | 27.3 | 33.3 | 15.2 | 27.3 | 0 | 42.4 | |

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127th St and Halsted Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/16/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Halsted Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Halsted Ave Crossing South Leg | | | 127th St Crossing West Leg | | | Int. Total |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 0 | 0 | 0 | 11 | 11 | 1 | 2 | 3 | 0 | 1 | 1 | 15 |
| 04:15 PM | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 10 | 10 | 17 |
| 04:30 PM | 0 | 2 | 2 | 1 | 3 | 4 | 0 | 3 | 3 | 0 | 4 | 4 | 13 |
| 04:45 PM | 2 | 1 | 3 | 0 | 5 | 5 | 1 | 0 | 1 | 2 | 8 | 10 | 19 |
| Total | 2 | 6 | 8 | 1 | 20 | 21 | 2 | 8 | 10 | 2 | 23 | 25 | 64 |
| 05:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 4 |
| 05:15 PM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 3 | 8 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 3 | 3 | 7 |
| Total | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 2 | 2 | 2 | 8 | 10 | 20 |
| Grand Total | 2 | 10 | 12 | 1 | 24 | 25 | 2 | 10 | 12 | 4 | 31 | 35 | 84 |
| Apprch % | 16.7 | 83.3 | | 4 | 96 | | 16.7 | 83.3 | | 11.4 | 88.6 | | |
| Total % | 2.4 | 11.9 | 14.3 | 1.2 | 28.6 | 29.8 | 2.4 | 11.9 | 14.3 | 4.8 | 36.9 | 41.7 | |

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127th St and Marshfield Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 61 | 118 | 0 | 179 | 70 | 77 | 105 | 252 | 0 | 151 | 84 | 235 | 666 |
| 07:15 AM | 0 | 0 | 0 | 0 | 61 | 148 | 0 | 209 | 83 | 76 | 109 | 268 | 0 | 162 | 81 | 243 | 720 |
| 07:30 AM | 0 | 0 | 0 | 0 | 64 | 156 | 0 | 220 | 100 | 72 | 131 | 303 | 0 | 160 | 73 | 233 | 756 |
| 07:45 AM | 0 | 0 | 0 | 0 | 53 | 162 | 0 | 215 | 75 | 77 | 132 | 284 | 0 | 191 | 87 | 278 | 777 |
| Total | 0 | 0 | 0 | 0 | 239 | 584 | 0 | 823 | 328 | 302 | 477 | 1107 | 0 | 664 | 325 | 989 | 2919 |
| 08:00 AM | 0 | 0 | 0 | 0 | 62 | 139 | 0 | 201 | 60 | 64 | 97 | 221 | 0 | 225 | 73 | 298 | 720 |
| 08:15 AM | 0 | 0 | 0 | 0 | 55 | 138 | 0 | 193 | 62 | 68 | 94 | 224 | 0 | 159 | 69 | 228 | 645 |
| 08:30 AM | 0 | 0 | 0 | 0 | 59 | 169 | 0 | 228 | 45 | 64 | 66 | 175 | 0 | 177 | 94 | 271 | 674 |
| 08:45 AM | 0 | 0 | 0 | 0 | 61 | 170 | 0 | 231 | 50 | 73 | 82 | 205 | 0 | 173 | 70 | 243 | 679 |
| Total | 0 | 0 | 0 | 0 | 237 | 616 | 0 | 853 | 217 | 269 | 339 | 825 | 0 | 734 | 306 | 1040 | 2718 |
| Grand Total | 0 | 0 | 0 | 0 | 476 | 1200 | 0 | 1676 | 545 | 571 | 816 | 1932 | 0 | 1398 | 631 | 2029 | 5637 |
| Apprch % | 0 | 0 | 0 | | 28.4 | 71.6 | 0 | | 28.2 | 29.6 | 42.2 | | 0 | 68.9 | 31.1 | | |
| Total % | 0 | 0 | 0 | 0 | 8.4 | 21.3 | 0 | 29.7 | 9.7 | 10.1 | 14.5 | 34.3 | 0 | 24.8 | 11.2 | 36 | |
| PC | 0 | 0 | 0 | 0 | 456 | 1094 | 0 | 1550 | 519 | 554 | 777 | 1850 | 0 | 1283 | 564 | 1847 | 5247 |
| % PC | 0 | 0 | 0 | 0 | 95.8 | 91.2 | 0 | 92.5 | 95.2 | 97 | 95.2 | 95.8 | 0 | 91.8 | 89.4 | 91 | 93.1 |
| SU | 0 | 0 | 0 | 0 | 12 | 73 | 0 | 85 | 16 | 15 | 17 | 48 | 0 | 83 | 52 | 135 | 268 |
| % SU | 0 | 0 | 0 | 0 | 2.5 | 6.1 | 0 | 5.1 | 2.9 | 2.6 | 2.1 | 2.5 | 0 | 5.9 | 8.2 | 6.7 | 4.8 |
| MU | 0 | 0 | 0 | 0 | 8 | 33 | 0 | 41 | 10 | 2 | 22 | 34 | 0 | 32 | 15 | 47 | 122 |
| % MU | 0 | 0 | 0 | 0 | 1.7 | 2.8 | 0 | 2.4 | 1.8 | 0.4 | 2.7 | 1.8 | 0 | 2.3 | 2.4 | 2.3 | 2.2 |

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|--|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 0 | 0 | 0 | 0 | 61 | 148 | 0 | 209 | 83 | 76 | 109 | 268 | 0 | 162 | 81 | 243 | 720 |
| 07:30 AM | 0 | 0 | 0 | 0 | 64 | 156 | 0 | 220 | 100 | 72 | 131 | 303 | 0 | 160 | 73 | 233 | 756 |
| 07:45 AM | 0 | 0 | 0 | 0 | 53 | 162 | 0 | 215 | 75 | 77 | 132 | 284 | 0 | 191 | 87 | 278 | 777 |
| 08:00 AM | 0 | 0 | 0 | 0 | 62 | 139 | 0 | 201 | 60 | 64 | 97 | 221 | 0 | 225 | 73 | 298 | 720 |
| Total Volume | 0 | 0 | 0 | 0 | 240 | 605 | 0 | 845 | 318 | 289 | 469 | 1076 | 0 | 738 | 314 | 1052 | 2973 |
| % App. Total | 0 | 0 | 0 | | 28.4 | 71.6 | 0 | | 29.6 | 26.9 | 43.6 | | 0 | 70.2 | 29.8 | | |
| PHF | .000 | .000 | .000 | .000 | .938 | .934 | .000 | .960 | .795 | .938 | .888 | .888 | .000 | .820 | .902 | .883 | .957 |

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127th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 2

Groups Printed- SU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 9 | 1 | 2 | 4 | 7 | 0 | 9 | 10 | 19 | 35 |
| 07:15 AM | 0 | 0 | 0 | 0 | 4 | 14 | 0 | 18 | 2 | 0 | 1 | 3 | 0 | 5 | 9 | 14 | 35 |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 5 | 4 | 7 | 16 | 0 | 15 | 9 | 24 | 46 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 1 | 2 | 2 | 5 | 0 | 12 | 10 | 22 | 34 |
| Total | 0 | 0 | 0 | 0 | 7 | 33 | 0 | 40 | 9 | 8 | 14 | 31 | 0 | 41 | 38 | 79 | 150 |
| 08:00 AM | 0 | 0 | 0 | 0 | 3 | 10 | 0 | 13 | 1 | 1 | 0 | 2 | 0 | 11 | 3 | 14 | 29 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 1 | 1 | 1 | 3 | 0 | 9 | 1 | 10 | 19 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 15 | 1 | 1 | 0 | 2 | 0 | 12 | 6 | 18 | 35 |
| 08:45 AM | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 4 | 4 | 2 | 10 | 0 | 10 | 4 | 14 | 35 |
| Total | 0 | 0 | 0 | 0 | 5 | 40 | 0 | 45 | 7 | 7 | 3 | 17 | 0 | 42 | 14 | 56 | 118 |
| Grand Total | 0 | 0 | 0 | 0 | 12 | 73 | 0 | 85 | 16 | 15 | 17 | 48 | 0 | 83 | 52 | 135 | 268 |
| Apprch % | 0 | 0 | 0 | | 14.1 | 85.9 | 0 | | 33.3 | 31.2 | 35.4 | | 0 | 61.5 | 38.5 | | |
| Total % | 0 | 0 | 0 | 0 | 4.5 | 27.2 | 0 | 31.7 | 6 | 5.6 | 6.3 | 17.9 | 0 | 31 | 19.4 | 50.4 | |

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127th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 3

Groups Printed- MU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 5 | 6 | 0 | 1 | 3 | 4 | 12 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 1 | 0 | 2 | 3 | 0 | 4 | 1 | 5 | 13 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 2 | 0 | 4 | 6 | 0 | 3 | 2 | 5 | 15 |
| 07:45 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 4 | 0 | 2 | 6 | 0 | 5 | 1 | 6 | 14 |
| Total | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 13 | 8 | 0 | 13 | 21 | 0 | 13 | 7 | 20 | 54 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 1 | 0 | 2 | 3 | 0 | 6 | 2 | 8 | 18 |
| 08:15 AM | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 9 | 0 | 1 | 1 | 2 | 0 | 4 | 1 | 5 | 16 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 1 | 2 | 4 | 0 | 4 | 3 | 7 | 14 |
| 08:45 AM | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 9 | 0 | 0 | 4 | 4 | 0 | 5 | 2 | 7 | 20 |
| Total | 0 | 0 | 0 | 0 | 4 | 24 | 0 | 28 | 2 | 2 | 9 | 13 | 0 | 19 | 8 | 27 | 68 |
| Grand Total | 0 | 0 | 0 | 0 | 8 | 33 | 0 | 41 | 10 | 2 | 22 | 34 | 0 | 32 | 15 | 47 | 122 |
| Apprch % | 0 | 0 | 0 | | 19.5 | 80.5 | 0 | | 29.4 | 5.9 | 64.7 | | 0 | 68.1 | 31.9 | | |
| Total % | 0 | 0 | 0 | 0 | 6.6 | 27 | 0 | 33.6 | 8.2 | 1.6 | 18 | 27.9 | 0 | 26.2 | 12.3 | 38.5 | |

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127th St and Marshfield Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/22/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 127th St Crossing West Leg | | | Int. Total |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 7 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 08:45 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| Total | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 9 |
| Grand Total | 0 | 9 | 9 | 0 | 2 | 2 | 0 | 5 | 5 | 0 | 0 | 0 | 16 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 0 | | |
| Total % | 0 | 56.2 | 56.2 | 0 | 12.5 | 12.5 | 0 | 31.2 | 31.2 | 0 | 0 | 0 | |

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127th St and Marshfield Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 57 | 157 | 0 | 214 | 62 | 70 | 74 | 206 | 0 | 247 | 83 | 330 | 750 |
| 04:15 PM | 0 | 0 | 0 | 0 | 66 | 176 | 0 | 242 | 68 | 66 | 67 | 201 | 0 | 256 | 94 | 350 | 793 |
| 04:30 PM | 0 | 0 | 0 | 0 | 63 | 160 | 0 | 223 | 54 | 63 | 83 | 200 | 0 | 280 | 105 | 385 | 808 |
| 04:45 PM | 0 | 0 | 0 | 0 | 82 | 207 | 0 | 289 | 52 | 68 | 74 | 194 | 0 | 243 | 95 | 338 | 821 |
| Total | 0 | 0 | 0 | 0 | 268 | 700 | 0 | 968 | 236 | 267 | 298 | 801 | 0 | 1026 | 377 | 1403 | 3172 |
| 05:00 PM | 0 | 0 | 0 | 0 | 70 | 176 | 0 | 246 | 60 | 67 | 79 | 206 | 0 | 265 | 69 | 334 | 786 |
| 05:15 PM | 0 | 0 | 0 | 0 | 67 | 172 | 0 | 239 | 67 | 62 | 83 | 212 | 0 | 254 | 101 | 355 | 806 |
| 05:30 PM | 0 | 0 | 0 | 0 | 58 | 124 | 0 | 182 | 62 | 70 | 96 | 228 | 0 | 229 | 79 | 308 | 718 |
| 05:45 PM | 0 | 0 | 0 | 0 | 66 | 182 | 0 | 248 | 48 | 71 | 62 | 181 | 0 | 248 | 78 | 326 | 755 |
| Total | 0 | 0 | 0 | 0 | 261 | 654 | 0 | 915 | 237 | 270 | 320 | 827 | 0 | 996 | 327 | 1323 | 3065 |
| Grand Total | 0 | 0 | 0 | 0 | 529 | 1354 | 0 | 1883 | 473 | 537 | 618 | 1628 | 0 | 2022 | 704 | 2726 | 6237 |
| Apprch % | 0 | 0 | 0 | | 28.1 | 71.9 | 0 | | 29.1 | 33 | 38 | | 0 | 74.2 | 25.8 | | |
| Total % | 0 | 0 | 0 | 0 | 8.5 | 21.7 | 0 | 30.2 | 7.6 | 8.6 | 9.9 | 26.1 | 0 | 32.4 | 11.3 | 43.7 | |
| PC | 0 | 0 | 0 | 0 | 518 | 1312 | 0 | 1830 | 458 | 526 | 607 | 1591 | 0 | 1968 | 674 | 2642 | 6063 |
| % PC | 0 | 0 | 0 | 0 | 97.9 | 96.9 | 0 | 97.2 | 96.8 | 98 | 98.2 | 97.7 | 0 | 97.3 | 95.7 | 96.9 | 97.2 |
| SU | 0 | 0 | 0 | 0 | 6 | 27 | 0 | 33 | 6 | 5 | 6 | 17 | 0 | 31 | 11 | 42 | 92 |
| % SU | 0 | 0 | 0 | 0 | 1.1 | 2 | 0 | 1.8 | 1.3 | 0.9 | 1 | 1 | 0 | 1.5 | 1.6 | 1.5 | 1.5 |
| MU | 0 | 0 | 0 | 0 | 5 | 15 | 0 | 20 | 9 | 6 | 5 | 20 | 0 | 23 | 19 | 42 | 82 |
| % MU | 0 | 0 | 0 | 0 | 0.9 | 1.1 | 0 | 1.1 | 1.9 | 1.1 | 0.8 | 1.2 | 0 | 1.1 | 2.7 | 1.5 | 1.3 |

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|--|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 0 | 0 | 0 | 0 | 63 | 160 | 0 | 223 | 54 | 63 | 83 | 200 | 0 | 280 | 105 | 385 | 808 |
| 04:45 PM | 0 | 0 | 0 | 0 | 82 | 207 | 0 | 289 | 52 | 68 | 74 | 194 | 0 | 243 | 95 | 338 | 821 |
| 05:00 PM | 0 | 0 | 0 | 0 | 70 | 176 | 0 | 246 | 60 | 67 | 79 | 206 | 0 | 265 | 69 | 334 | 786 |
| 05:15 PM | 0 | 0 | 0 | 0 | 67 | 172 | 0 | 239 | 67 | 62 | 83 | 212 | 0 | 254 | 101 | 355 | 806 |
| Total Volume | 0 | 0 | 0 | 0 | 282 | 715 | 0 | 997 | 233 | 260 | 319 | 812 | 0 | 1042 | 370 | 1412 | 3221 |
| % App. Total | 0 | 0 | 0 | | 28.3 | 71.7 | 0 | | 28.7 | 32 | 39.3 | | 0 | 73.8 | 26.2 | | |
| PHF | .000 | .000 | .000 | .000 | .860 | .864 | .000 | .862 | .869 | .956 | .961 | .958 | .000 | .930 | .881 | .917 | .981 |

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127th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 6

Groups Printed- SU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 5 | 1 | 6 | 13 |
| 04:15 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 7 | 13 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 1 | 0 | 2 | 0 | 4 | 1 | 5 | 11 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 2 | 1 | 3 | 6 | 0 | 5 | 5 | 10 | 22 |
| Total | 0 | 0 | 0 | 0 | 4 | 18 | 0 | 22 | 3 | 2 | 4 | 9 | 0 | 19 | 9 | 28 | 59 |
| 05:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 3 | 0 | 3 | 0 | 3 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 1 | 1 | 0 | 2 | 0 | 4 | 1 | 5 | 12 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 2 | 0 | 2 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 8 |
| Total | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 11 | 3 | 3 | 2 | 8 | 0 | 12 | 2 | 14 | 33 |
| Grand Total | 0 | 0 | 0 | 0 | 6 | 27 | 0 | 33 | 6 | 5 | 6 | 17 | 0 | 31 | 11 | 42 | 92 |
| Apprch % | 0 | 0 | 0 | | 18.2 | 81.8 | 0 | | 35.3 | 29.4 | 35.3 | | 0 | 73.8 | 26.2 | | |
| Total % | 0 | 0 | 0 | 0 | 6.5 | 29.3 | 0 | 35.9 | 6.5 | 5.4 | 6.5 | 18.5 | 0 | 33.7 | 12 | 45.7 | |

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127th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 7

Groups Printed- MU

| | Marshfield Ave From North | | | | 127th St From East | | | | Marshfield Ave From South | | | | 127th St From West | | | | |
|-------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 5 | 9 | 12 |
| 04:15 PM | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 3 | 2 | 0 | 5 | 0 | 2 | 3 | 5 | 16 |
| 04:30 PM | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 9 | 12 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 2 | 2 | 0 | 4 | 0 | 2 | 0 | 2 | 9 |
| Total | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 13 | 5 | 5 | 1 | 11 | 0 | 10 | 15 | 25 | 49 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 0 | 5 | 0 | 5 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 4 | 1 | 5 | 9 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 1 | 1 | 5 | 0 | 2 | 0 | 2 | 8 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 3 | 5 | 6 |
| Total | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 4 | 1 | 4 | 9 | 0 | 13 | 4 | 17 | 33 |
| Grand Total | 0 | 0 | 0 | 0 | 5 | 15 | 0 | 20 | 9 | 6 | 5 | 20 | 0 | 23 | 19 | 42 | 82 |
| Apprch % | 0 | 0 | 0 | | 25 | 75 | 0 | | 45 | 30 | 25 | | 0 | 54.8 | 45.2 | | |
| Total % | 0 | 0 | 0 | | 6.1 | 18.3 | 0 | 24.4 | 11 | 7.3 | 6.1 | 24.4 | 0 | 28 | 23.2 | 51.2 | |

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127th St and Marshfield Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/22/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Marshfield Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Marshfield Ave Crossing South Leg | | | 127th St Crossing West Leg | | | Int. Total |
|-------------|--------------------------------------|------|------------|-------------------------------|------|------------|--------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 3 | 3 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 6 |
| 04:45 PM | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| Total | 2 | 8 | 10 | 0 | 2 | 2 | 1 | 3 | 4 | 0 | 0 | 0 | 16 |
| 05:00 PM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 5 |
| 05:15 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 3 |
| 05:45 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| Total | 1 | 7 | 8 | 0 | 0 | 0 | 1 | 5 | 6 | 0 | 0 | 0 | 14 |
| Grand Total | 3 | 15 | 18 | 0 | 2 | 2 | 2 | 8 | 10 | 0 | 0 | 0 | 30 |
| Apprch % | 16.7 | 83.3 | | 0 | 100 | | 20 | 80 | | 0 | 0 | | |
| Total % | 10 | 50 | 60 | 0 | 6.7 | 6.7 | 6.7 | 26.7 | 33.3 | 0 | 0 | 0 | |

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127th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 6 | 0 | 15 | 21 | 28 | 108 | 0 | 136 | 0 | 0 | 0 | 0 | 0 | 106 | 6 | 112 | 269 |
| 07:15 AM | 16 | 0 | 28 | 44 | 35 | 114 | 0 | 149 | 0 | 0 | 0 | 0 | 0 | 116 | 17 | 133 | 326 |
| 07:30 AM | 11 | 0 | 31 | 42 | 40 | 122 | 0 | 162 | 0 | 0 | 0 | 0 | 0 | 121 | 9 | 130 | 334 |
| 07:45 AM | 15 | 0 | 34 | 49 | 40 | 136 | 0 | 176 | 0 | 0 | 0 | 0 | 0 | 128 | 12 | 140 | 365 |
| Total | 48 | 0 | 108 | 156 | 143 | 480 | 0 | 623 | 0 | 0 | 0 | 0 | 0 | 471 | 44 | 515 | 1294 |
| 08:00 AM | 11 | 0 | 31 | 42 | 45 | 124 | 0 | 169 | 0 | 0 | 0 | 0 | 0 | 113 | 13 | 126 | 337 |
| 08:15 AM | 12 | 0 | 22 | 34 | 44 | 134 | 0 | 178 | 0 | 0 | 0 | 0 | 0 | 102 | 12 | 114 | 326 |
| 08:30 AM | 6 | 0 | 34 | 40 | 45 | 117 | 0 | 162 | 0 | 0 | 0 | 0 | 0 | 121 | 16 | 137 | 339 |
| 08:45 AM | 18 | 0 | 30 | 48 | 46 | 150 | 0 | 196 | 0 | 0 | 0 | 0 | 0 | 106 | 13 | 119 | 363 |
| Total | 47 | 0 | 117 | 164 | 180 | 525 | 0 | 705 | 0 | 0 | 0 | 0 | 0 | 442 | 54 | 496 | 1365 |
| Grand Total | 95 | 0 | 225 | 320 | 323 | 1005 | 0 | 1328 | 0 | 0 | 0 | 0 | 0 | 913 | 98 | 1011 | 2659 |
| Apprch % | 29.7 | 0 | 70.3 | | 24.3 | 75.7 | 0 | | 0 | 0 | 0 | | 0 | 90.3 | 9.7 | | |
| Total % | 3.6 | 0 | 8.5 | 12 | 12.1 | 37.8 | 0 | 49.9 | 0 | 0 | 0 | 0 | 0 | 34.3 | 3.7 | 38 | |
| PC | 92 | 0 | 203 | 295 | 285 | 916 | 0 | 1201 | 0 | 0 | 0 | 0 | 0 | 824 | 95 | 919 | 2415 |
| % PC | 96.8 | 0 | 90.2 | 92.2 | 88.2 | 91.1 | 0 | 90.4 | 0 | 0 | 0 | 0 | 0 | 90.3 | 96.9 | 90.9 | 90.8 |
| SU | 3 | 0 | 22 | 25 | 38 | 52 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 45 | 3 | 48 | 163 |
| % SU | 3.2 | 0 | 9.8 | 7.8 | 11.8 | 5.2 | 0 | 6.8 | 0 | 0 | 0 | 0 | 0 | 4.9 | 3.1 | 4.7 | 6.1 |
| MU | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 44 | 81 |
| % MU | 0 | 0 | 0 | 0 | 0 | 3.7 | 0 | 2.8 | 0 | 0 | 0 | 0 | 0 | 4.8 | 0 | 4.4 | 3 |

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 15 | 0 | 34 | 49 | 40 | 136 | 0 | 176 | 0 | 0 | 0 | 0 | 0 | 128 | 12 | 140 | 365 |
| 08:00 AM | 11 | 0 | 31 | 42 | 45 | 124 | 0 | 169 | 0 | 0 | 0 | 0 | 0 | 113 | 13 | 126 | 337 |
| 08:15 AM | 12 | 0 | 22 | 34 | 44 | 134 | 0 | 178 | 0 | 0 | 0 | 0 | 0 | 102 | 12 | 114 | 326 |
| 08:30 AM | 6 | 0 | 34 | 40 | 45 | 117 | 0 | 162 | 0 | 0 | 0 | 0 | 0 | 121 | 16 | 137 | 339 |
| Total Volume | 44 | 0 | 121 | 165 | 174 | 511 | 0 | 685 | 0 | 0 | 0 | 0 | 0 | 464 | 53 | 517 | 1367 |
| % App. Total | 26.7 | 0 | 73.3 | | 25.4 | 74.6 | 0 | | 0 | 0 | 0 | | 0 | 89.7 | 10.3 | | |
| PHF | .733 | .000 | .890 | .842 | .967 | .939 | .000 | .962 | .000 | .000 | .000 | .000 | .000 | .906 | .828 | .923 | .936 |

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127th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 4 | 4 | 5 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 20 |
| 07:15 AM | 0 | 0 | 2 | 2 | 6 | 9 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 28 |
| 07:30 AM | 1 | 0 | 3 | 4 | 4 | 4 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 19 |
| 07:45 AM | 0 | 0 | 2 | 2 | 4 | 4 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 13 |
| Total | 1 | 0 | 11 | 12 | 19 | 21 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 27 | 1 | 28 | 80 |
| 08:00 AM | 1 | 0 | 5 | 6 | 5 | 8 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 23 |
| 08:15 AM | 0 | 0 | 1 | 1 | 7 | 9 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 22 |
| 08:30 AM | 1 | 0 | 3 | 4 | 3 | 7 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 18 |
| 08:45 AM | 0 | 0 | 2 | 2 | 4 | 7 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 20 |
| Total | 2 | 0 | 11 | 13 | 19 | 31 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 18 | 2 | 20 | 83 |
| Grand Total | 3 | 0 | 22 | 25 | 38 | 52 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 45 | 3 | 48 | 163 |
| Apprch % | 12 | 0 | 88 | | 42.2 | 57.8 | 0 | | 0 | 0 | 0 | | 0 | 93.8 | 6.2 | | |
| Total % | 1.8 | 0 | 13.5 | 15.3 | 23.3 | 31.9 | 0 | 55.2 | 0 | 0 | 0 | 0 | 0 | 27.6 | 1.8 | 29.4 | |

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127th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 10 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 12 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 9 |
| Total | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 39 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 9 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 13 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 8 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 12 |
| Total | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 42 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 44 | 81 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 45.7 | 0 | 45.7 | 0 | 0 | 0 | | 0 | 54.3 | 0 | 54.3 | |

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127th St and Michigan Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 127th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 1 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Apprch % | 20 | 80 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | |
| Total % | 20 | 80 | 100 | 0 | 0 | | 0 | 0 | | 0 | 0 | | |

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127th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 12 | 0 | 45 | 57 | 43 | 127 | 0 | 170 | 0 | 0 | 0 | 0 | 0 | 159 | 16 | 175 | 402 |
| 04:15 PM | 26 | 0 | 59 | 85 | 47 | 127 | 0 | 174 | 0 | 0 | 0 | 0 | 0 | 164 | 20 | 184 | 443 |
| 04:30 PM | 32 | 0 | 52 | 84 | 23 | 99 | 0 | 122 | 0 | 0 | 0 | 0 | 0 | 159 | 17 | 176 | 382 |
| 04:45 PM | 26 | 0 | 48 | 74 | 37 | 194 | 0 | 231 | 0 | 0 | 0 | 0 | 0 | 185 | 16 | 201 | 506 |
| Total | 96 | 0 | 204 | 300 | 150 | 547 | 0 | 697 | 0 | 0 | 0 | 0 | 0 | 667 | 69 | 736 | 1733 |
| 05:00 PM | 17 | 0 | 50 | 67 | 38 | 137 | 0 | 175 | 0 | 0 | 0 | 0 | 0 | 155 | 15 | 170 | 412 |
| 05:15 PM | 26 | 0 | 73 | 99 | 30 | 116 | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 186 | 20 | 206 | 451 |
| 05:30 PM | 19 | 0 | 60 | 79 | 32 | 97 | 0 | 129 | 0 | 0 | 0 | 0 | 0 | 157 | 18 | 175 | 383 |
| 05:45 PM | 18 | 0 | 56 | 74 | 36 | 140 | 0 | 176 | 0 | 0 | 0 | 0 | 0 | 195 | 17 | 212 | 462 |
| Total | 80 | 0 | 239 | 319 | 136 | 490 | 0 | 626 | 0 | 0 | 0 | 0 | 0 | 693 | 70 | 763 | 1708 |
| Grand Total | 176 | 0 | 443 | 619 | 286 | 1037 | 0 | 1323 | 0 | 0 | 0 | 0 | 0 | 1360 | 139 | 1499 | 3441 |
| Apprch % | 28.4 | 0 | 71.6 | | 21.6 | 78.4 | 0 | | 0 | 0 | 0 | | 0 | 90.7 | 9.3 | | |
| Total % | 5.1 | 0 | 12.9 | 18 | 8.3 | 30.1 | 0 | 38.4 | 0 | 0 | 0 | 0 | 0 | 39.5 | 4 | 43.6 | |
| PC | 172 | 0 | 416 | 588 | 261 | 1010 | 0 | 1271 | 0 | 0 | 0 | 0 | 0 | 1328 | 138 | 1466 | 3325 |
| % PC | 97.7 | 0 | 93.9 | 95 | 91.3 | 97.4 | 0 | 96.1 | 0 | 0 | 0 | 0 | 0 | 97.6 | 99.3 | 97.8 | 96.6 |
| SU | 4 | 0 | 27 | 31 | 25 | 18 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 18 | 1 | 19 | 93 |
| % SU | 2.3 | 0 | 6.1 | 5 | 8.7 | 1.7 | 0 | 3.3 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0.7 | 1.3 | 2.7 |
| MU | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 23 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.9 | 0.7 |

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|--|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 26 | 0 | 48 | 74 | 37 | 194 | 0 | 231 | 0 | 0 | 0 | 0 | 0 | 185 | 16 | 201 | 506 |
| 05:00 PM | 17 | 0 | 50 | 67 | 38 | 137 | 0 | 175 | 0 | 0 | 0 | 0 | 0 | 155 | 15 | 170 | 412 |
| 05:15 PM | 26 | 0 | 73 | 99 | 30 | 116 | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 186 | 20 | 206 | 451 |
| 05:30 PM | 19 | 0 | 60 | 79 | 32 | 97 | 0 | 129 | 0 | 0 | 0 | 0 | 0 | 157 | 18 | 175 | 383 |
| Total Volume | 88 | 0 | 231 | 319 | 137 | 544 | 0 | 681 | 0 | 0 | 0 | 0 | 0 | 683 | 69 | 752 | 1752 |
| % App. Total | 27.6 | 0 | 72.4 | | 20.1 | 79.9 | 0 | | 0 | 0 | 0 | | 0 | 90.8 | 9.2 | | |
| PHF | .846 | .000 | .791 | .806 | .901 | .701 | .000 | .737 | .000 | .000 | .000 | .000 | .000 | .918 | .863 | .913 | .866 |

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127th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 4 | 4 | 5 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 12 |
| 04:15 PM | 0 | 0 | 3 | 3 | 3 | 4 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 16 |
| 04:30 PM | 0 | 0 | 3 | 3 | 4 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 12 |
| 04:45 PM | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| Total | 0 | 0 | 13 | 13 | 12 | 10 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 45 |
| 05:00 PM | 2 | 0 | 6 | 8 | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 18 |
| 05:15 PM | 0 | 0 | 3 | 3 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 8 |
| 05:30 PM | 2 | 0 | 4 | 6 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 13 |
| 05:45 PM | 0 | 0 | 1 | 1 | 4 | 4 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Total | 4 | 0 | 14 | 18 | 13 | 8 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 48 |
| Grand Total | 4 | 0 | 27 | 31 | 25 | 18 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 18 | 1 | 19 | 93 |
| Apprch % | 12.9 | 0 | 87.1 | | 58.1 | 41.9 | 0 | | 0 | 0 | 0 | | 0 | 94.7 | 5.3 | | |
| Total % | 4.3 | 0 | 29 | 33.3 | 26.9 | 19.4 | 0 | 46.2 | 0 | 0 | 0 | 0 | 0 | 19.4 | 1.1 | 20.4 | |

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127th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 127th St From East | | | | Michigan Ave From South | | | | 127th St From West | | | | |
|-------------|----------------------------|------|------|------------|-----------------------|------|------|------------|----------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 15 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 8 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 23 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 39.1 | 0 | 39.1 | 0 | 0 | 0 | | 0 | 60.9 | 0 | 60.9 | |

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127th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 127th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 127th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|-------------------------------|------|------------|------------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| Grand Total | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| Apprch % | 0 | 100 | | 0 | 0 | | 0 | 0 | | 0 | 100 | | |
| Total % | 0 | 75 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | |

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127th St and Paulina St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 72 | 34 | 55 | 161 | 0 | 187 | 52 | 239 | 0 | 0 | 0 | 0 | 42 | 211 | 0 | 253 | 653 |
| 07:15 AM | 80 | 56 | 76 | 212 | 0 | 299 | 57 | 356 | 0 | 0 | 0 | 0 | 51 | 300 | 0 | 351 | 919 |
| 07:30 AM | 112 | 58 | 120 | 290 | 0 | 306 | 60 | 366 | 0 | 0 | 0 | 0 | 61 | 368 | 0 | 429 | 1085 |
| 07:45 AM | 117 | 85 | 110 | 312 | 0 | 324 | 72 | 396 | 0 | 0 | 0 | 0 | 66 | 377 | 0 | 443 | 1151 |
| Total | 381 | 233 | 361 | 975 | 0 | 1116 | 241 | 1357 | 0 | 0 | 0 | 0 | 220 | 1256 | 0 | 1476 | 3808 |
| 08:00 AM | 67 | 46 | 116 | 229 | 0 | 217 | 48 | 265 | 0 | 0 | 0 | 0 | 57 | 418 | 0 | 475 | 969 |
| 08:15 AM | 86 | 52 | 145 | 283 | 0 | 217 | 77 | 294 | 0 | 0 | 0 | 0 | 30 | 381 | 0 | 411 | 988 |
| 08:30 AM | 69 | 55 | 112 | 236 | 0 | 217 | 54 | 271 | 0 | 0 | 0 | 0 | 48 | 404 | 0 | 452 | 959 |
| 08:45 AM | 80 | 49 | 178 | 307 | 0 | 211 | 63 | 274 | 0 | 0 | 0 | 0 | 25 | 268 | 0 | 293 | 874 |
| Total | 302 | 202 | 551 | 1055 | 0 | 862 | 242 | 1104 | 0 | 0 | 0 | 0 | 160 | 1471 | 0 | 1631 | 3790 |
| Grand Total | 683 | 435 | 912 | 2030 | 0 | 1978 | 483 | 2461 | 0 | 0 | 0 | 0 | 380 | 2727 | 0 | 3107 | 7598 |
| Apprch % | 33.6 | 21.4 | 44.9 | | 0 | 80.4 | 19.6 | | 0 | 0 | 0 | | 12.2 | 87.8 | 0 | | |
| Total % | 9 | 5.7 | 12 | 26.7 | 0 | 26 | 6.4 | 32.4 | 0 | 0 | 0 | 0 | 5 | 35.9 | 0 | 40.9 | |
| PC | 629 | 418 | 878 | 1925 | 0 | 1871 | 442 | 2313 | 0 | 0 | 0 | 0 | 358 | 2587 | 0 | 2945 | 7183 |
| % PC | 92.1 | 96.1 | 96.3 | 94.8 | 0 | 94.6 | 91.5 | 94 | 0 | 0 | 0 | 0 | 94.2 | 94.9 | 0 | 94.8 | 94.5 |
| SU | 32 | 11 | 25 | 68 | 0 | 71 | 15 | 86 | 0 | 0 | 0 | 0 | 11 | 89 | 0 | 100 | 254 |
| % SU | 4.7 | 2.5 | 2.7 | 3.3 | 0 | 3.6 | 3.1 | 3.5 | 0 | 0 | 0 | 0 | 2.9 | 3.3 | 0 | 3.2 | 3.3 |
| MU | 22 | 6 | 9 | 37 | 0 | 36 | 26 | 62 | 0 | 0 | 0 | 0 | 11 | 51 | 0 | 62 | 161 |
| % MU | 3.2 | 1.4 | 1 | 1.8 | 0 | 1.8 | 5.4 | 2.5 | 0 | 0 | 0 | 0 | 2.9 | 1.9 | 0 | 2 | 2.1 |

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 112 | 58 | 120 | 290 | 0 | 306 | 60 | 366 | 0 | 0 | 0 | 0 | 61 | 368 | 0 | 429 | 1085 |
| 07:45 AM | 117 | 85 | 110 | 312 | 0 | 324 | 72 | 396 | 0 | 0 | 0 | 0 | 66 | 377 | 0 | 443 | 1151 |
| 08:00 AM | 67 | 46 | 116 | 229 | 0 | 217 | 48 | 265 | 0 | 0 | 0 | 0 | 57 | 418 | 0 | 475 | 969 |
| 08:15 AM | 86 | 52 | 145 | 283 | 0 | 217 | 77 | 294 | 0 | 0 | 0 | 0 | 30 | 381 | 0 | 411 | 988 |
| Total Volume | 382 | 241 | 491 | 1114 | 0 | 1064 | 257 | 1321 | 0 | 0 | 0 | 0 | 214 | 1544 | 0 | 1758 | 4193 |
| % App. Total | 34.3 | 21.6 | 44.1 | | 0 | 80.5 | 19.5 | | 0 | 0 | 0 | | 12.2 | 87.8 | 0 | | |
| PHF | .816 | .709 | .847 | .893 | .000 | .821 | .834 | .834 | .000 | .000 | .000 | .000 | .811 | .923 | .000 | .925 | .911 |

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127th St and Paulina St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 2

Groups Printed- SU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 3 | 0 | 0 | 3 | 0 | 10 | 2 | 12 | 0 | 0 | 0 | 0 | 2 | 18 | 0 | 20 | 35 |
| 07:15 AM | 3 | 3 | 1 | 7 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 26 |
| 07:30 AM | 3 | 2 | 5 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 4 | 19 | 0 | 23 | 42 |
| 07:45 AM | 3 | 3 | 3 | 9 | 0 | 8 | 4 | 12 | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 15 | 36 |
| Total | 12 | 8 | 9 | 29 | 0 | 39 | 7 | 46 | 0 | 0 | 0 | 0 | 8 | 56 | 0 | 64 | 139 |
| 08:00 AM | 3 | 1 | 2 | 6 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 26 |
| 08:15 AM | 4 | 1 | 1 | 6 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 7 | 19 |
| 08:30 AM | 4 | 1 | 4 | 9 | 0 | 11 | 4 | 15 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 35 |
| 08:45 AM | 9 | 0 | 9 | 18 | 0 | 7 | 2 | 9 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 8 | 35 |
| Total | 20 | 3 | 16 | 39 | 0 | 32 | 8 | 40 | 0 | 0 | 0 | 0 | 3 | 33 | 0 | 36 | 115 |
| Grand Total | 32 | 11 | 25 | 68 | 0 | 71 | 15 | 86 | 0 | 0 | 0 | 0 | 11 | 89 | 0 | 100 | 254 |
| Apprch % | 47.1 | 16.2 | 36.8 | | 0 | 82.6 | 17.4 | | 0 | 0 | 0 | | 11 | 89 | 0 | | |
| Total % | 12.6 | 4.3 | 9.8 | 26.8 | 0 | 28 | 5.9 | 33.9 | 0 | 0 | 0 | 0 | 4.3 | 35 | 0 | 39.4 | |

Regina Webster & Associates, Inc.

8619 West Bryn Mawr Avenue, Suite 602, Chicago, Illinois 60631

773-283-2600 Fax: 773-283-2602

www.RWAengineers.com

127th St and Paulina St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 3

Groups Printed- MU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 0 | 1 | 3 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 12 |
| 07:15 AM | 1 | 0 | 0 | 1 | 0 | 6 | 2 | 8 | 0 | 0 | 0 | 0 | 4 | 10 | 0 | 14 | 23 |
| 07:30 AM | 6 | 1 | 1 | 8 | 0 | 5 | 5 | 10 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 9 | 27 |
| 07:45 AM | 5 | 1 | 1 | 7 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 19 |
| Total | 14 | 2 | 3 | 19 | 0 | 17 | 7 | 24 | 0 | 0 | 0 | 0 | 10 | 28 | 0 | 38 | 81 |
| 08:00 AM | 2 | 0 | 0 | 2 | 0 | 5 | 4 | 9 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 8 | 19 |
| 08:15 AM | 0 | 0 | 2 | 2 | 0 | 3 | 6 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 15 |
| 08:30 AM | 3 | 0 | 2 | 5 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 15 |
| 08:45 AM | 3 | 4 | 2 | 9 | 0 | 8 | 7 | 15 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 31 |
| Total | 8 | 4 | 6 | 18 | 0 | 19 | 19 | 38 | 0 | 0 | 0 | 0 | 1 | 23 | 0 | 24 | 80 |
| Grand Total | 22 | 6 | 9 | 37 | 0 | 36 | 26 | 62 | 0 | 0 | 0 | 0 | 11 | 51 | 0 | 62 | 161 |
| Apprch % | 59.5 | 16.2 | 24.3 | | 0 | 58.1 | 41.9 | | 0 | 0 | 0 | | 17.7 | 82.3 | 0 | | |
| Total % | 13.7 | 3.7 | 5.6 | 23 | 0 | 22.4 | 16.1 | 38.5 | 0 | 0 | 0 | 0 | 6.8 | 31.7 | 0 | 38.5 | |

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127th St and Paulina St

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/22/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Paulina St Crossing North Leg | | | 127th St Crossing East Leg | | | Paulina St Crossing South Leg | | | 127th St Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|-------------------------------|------|------------|----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 4 | 9 |
| 07:45 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 3 |
| Total | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 5 | 5 | 17 |
| 08:00 AM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 10 |
| 08:15 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:30 AM | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 0 | 0 | 7 |
| 08:45 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 9 |
| Total | 0 | 12 | 12 | 0 | 2 | 2 | 0 | 11 | 11 | 0 | 3 | 3 | 28 |
| Grand Total | 0 | 19 | 19 | 0 | 2 | 2 | 0 | 16 | 16 | 0 | 8 | 8 | 45 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 42.2 | 42.2 | 0 | 4.4 | 4.4 | 0 | 35.6 | 35.6 | 0 | 17.8 | 17.8 | |

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127th St and Paulina St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 139 | 70 | 286 | 495 | 0 | 173 | 66 | 239 | 0 | 0 | 0 | 0 | 156 | 557 | 0 | 713 | 1447 |
| 04:15 PM | 94 | 79 | 260 | 433 | 0 | 187 | 56 | 243 | 0 | 0 | 0 | 0 | 135 | 402 | 0 | 537 | 1213 |
| 04:30 PM | 107 | 78 | 304 | 489 | 0 | 192 | 61 | 253 | 0 | 0 | 0 | 0 | 145 | 608 | 0 | 753 | 1495 |
| 04:45 PM | 136 | 64 | 267 | 467 | 0 | 242 | 78 | 320 | 0 | 0 | 0 | 0 | 122 | 575 | 0 | 697 | 1484 |
| Total | 476 | 291 | 1117 | 1884 | 0 | 794 | 261 | 1055 | 0 | 0 | 0 | 0 | 558 | 2142 | 0 | 2700 | 5639 |
| 05:00 PM | 128 | 113 | 295 | 536 | 7 | 187 | 87 | 281 | 0 | 0 | 0 | 0 | 132 | 539 | 0 | 671 | 1488 |
| 05:15 PM | 123 | 100 | 333 | 556 | 0 | 226 | 77 | 303 | 0 | 0 | 0 | 0 | 102 | 502 | 0 | 604 | 1463 |
| 05:30 PM | 108 | 101 | 321 | 530 | 0 | 163 | 72 | 235 | 0 | 0 | 0 | 0 | 135 | 465 | 0 | 600 | 1365 |
| 05:45 PM | 118 | 89 | 201 | 408 | 0 | 253 | 60 | 313 | 0 | 0 | 0 | 0 | 61 | 448 | 0 | 509 | 1230 |
| Total | 477 | 403 | 1150 | 2030 | 7 | 829 | 296 | 1132 | 0 | 0 | 0 | 0 | 430 | 1954 | 0 | 2384 | 5546 |
| Grand Total | 953 | 694 | 2267 | 3914 | 7 | 1623 | 557 | 2187 | 0 | 0 | 0 | 0 | 988 | 4096 | 0 | 5084 | 11185 |
| Apprch % | 24.3 | 17.7 | 57.9 | | 0.3 | 74.2 | 25.5 | | 0 | 0 | 0 | | 19.4 | 80.6 | 0 | | |
| Total % | 8.5 | 6.2 | 20.3 | 35 | 0.1 | 14.5 | 5 | 19.6 | 0 | 0 | 0 | 0 | 8.8 | 36.6 | 0 | 45.5 | |
| PC | 918 | 682 | 2253 | 3853 | 7 | 1575 | 548 | 2130 | 0 | 0 | 0 | 0 | 969 | 4016 | 0 | 4985 | 10968 |
| % PC | 96.3 | 98.3 | 99.4 | 98.4 | 100 | 97 | 98.4 | 97.4 | 0 | 0 | 0 | 0 | 98.1 | 98 | 0 | 98.1 | 98.1 |
| SU | 25 | 8 | 6 | 39 | 0 | 33 | 5 | 38 | 0 | 0 | 0 | 0 | 8 | 32 | 0 | 40 | 117 |
| % SU | 2.6 | 1.2 | 0.3 | 1 | 0 | 2 | 0.9 | 1.7 | 0 | 0 | 0 | 0 | 0.8 | 0.8 | 0 | 0.8 | 1 |
| MU | 10 | 4 | 8 | 22 | 0 | 15 | 4 | 19 | 0 | 0 | 0 | 0 | 11 | 48 | 0 | 59 | 100 |
| % MU | 1 | 0.6 | 0.4 | 0.6 | 0 | 0.9 | 0.7 | 0.9 | 0 | 0 | 0 | 0 | 1.1 | 1.2 | 0 | 1.2 | 0.9 |

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 107 | 78 | 304 | 489 | 0 | 192 | 61 | 253 | 0 | 0 | 0 | 0 | 145 | 608 | 0 | 753 | 1495 |
| 04:45 PM | 136 | 64 | 267 | 467 | 0 | 242 | 78 | 320 | 0 | 0 | 0 | 0 | 122 | 575 | 0 | 697 | 1484 |
| 05:00 PM | 128 | 113 | 295 | 536 | 7 | 187 | 87 | 281 | 0 | 0 | 0 | 0 | 132 | 539 | 0 | 671 | 1488 |
| 05:15 PM | 123 | 100 | 333 | 556 | 0 | 226 | 77 | 303 | 0 | 0 | 0 | 0 | 102 | 502 | 0 | 604 | 1463 |
| Total Volume | 494 | 355 | 1199 | 2048 | 7 | 847 | 303 | 1157 | 0 | 0 | 0 | 0 | 501 | 2224 | 0 | 2725 | 5930 |
| % App. Total | 24.1 | 17.3 | 58.5 | | 0.6 | 73.2 | 26.2 | | 0 | 0 | 0 | | 18.4 | 81.6 | 0 | | |
| PHF | .908 | .785 | .900 | .921 | .250 | .875 | .871 | .904 | .000 | .000 | .000 | .000 | .864 | .914 | .000 | .905 | .992 |

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127th St and Paulina St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 6

Groups Printed- SU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 10 | 3 | 1 | 14 | 0 | 7 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 28 |
| 04:15 PM | 6 | 1 | 0 | 7 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 17 |
| 04:30 PM | 3 | 1 | 2 | 6 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 12 |
| 04:45 PM | 1 | 0 | 1 | 2 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 18 |
| Total | 20 | 5 | 4 | 29 | 0 | 22 | 3 | 25 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 21 | 75 |
| 05:00 PM | 2 | 2 | 1 | 5 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 9 | 18 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 11 |
| 05:30 PM | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| 05:45 PM | 1 | 0 | 1 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| Total | 5 | 3 | 2 | 10 | 0 | 11 | 2 | 13 | 0 | 0 | 0 | 0 | 8 | 11 | 0 | 19 | 42 |
| Grand Total | 25 | 8 | 6 | 39 | 0 | 33 | 5 | 38 | 0 | 0 | 0 | 0 | 8 | 32 | 0 | 40 | 117 |
| Apprch % | 64.1 | 20.5 | 15.4 | | 0 | 86.8 | 13.2 | | 0 | 0 | 0 | | 20 | 80 | 0 | | |
| Total % | 21.4 | 6.8 | 5.1 | 33.3 | 0 | 28.2 | 4.3 | 32.5 | 0 | 0 | 0 | 0 | 6.8 | 27.4 | 0 | 34.2 | |

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127th St and Paulina St

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 7

Groups Printed- MU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 4 | 4 | 3 | 11 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 10 | 0 | 16 | 29 |
| 04:15 PM | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 13 |
| 04:30 PM | 2 | 0 | 1 | 3 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 9 | 14 |
| 04:45 PM | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 8 |
| Total | 7 | 4 | 8 | 19 | 0 | 6 | 3 | 9 | 0 | 0 | 0 | 0 | 10 | 26 | 0 | 36 | 64 |
| 05:00 PM | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 12 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 11 |
| 05:30 PM | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 8 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 5 |
| Total | 3 | 0 | 0 | 3 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 22 | 0 | 23 | 36 |
| Grand Total | 10 | 4 | 8 | 22 | 0 | 15 | 4 | 19 | 0 | 0 | 0 | 0 | 11 | 48 | 0 | 59 | 100 |
| Apprch % | 45.5 | 18.2 | 36.4 | | 0 | 78.9 | 21.1 | | 0 | 0 | 0 | | 18.6 | 81.4 | 0 | | |
| Total % | 10 | 4 | 8 | 22 | 0 | 15 | 4 | 19 | 0 | 0 | 0 | 0 | 11 | 48 | 0 | 59 | |

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127th St and Paulina St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 8

Groups Printed- PC - SU - MU

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|-------------|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 139 | 70 | 286 | 495 | 0 | 173 | 66 | 239 | 0 | 0 | 0 | 0 | 156 | 557 | 0 | 713 | 1447 |
| 04:15 PM | 94 | 79 | 260 | 433 | 0 | 187 | 56 | 243 | 0 | 0 | 0 | 0 | 135 | 402 | 0 | 537 | 1213 |
| 04:30 PM | 107 | 78 | 304 | 489 | 0 | 192 | 61 | 253 | 0 | 0 | 0 | 0 | 145 | 608 | 0 | 753 | 1495 |
| 04:45 PM | 136 | 64 | 267 | 467 | 0 | 242 | 78 | 320 | 0 | 0 | 0 | 0 | 122 | 575 | 0 | 697 | 1484 |
| Total | 476 | 291 | 1117 | 1884 | 0 | 794 | 261 | 1055 | 0 | 0 | 0 | 0 | 558 | 2142 | 0 | 2700 | 5639 |
| 05:00 PM | 128 | 113 | 295 | 536 | 0 | 187 | 87 | 274 | 0 | 0 | 0 | 0 | 132 | 539 | 0 | 671 | 1481 |
| 05:15 PM | 123 | 100 | 333 | 556 | 0 | 226 | 77 | 303 | 0 | 0 | 0 | 0 | 102 | 502 | 0 | 604 | 1463 |
| 05:30 PM | 108 | 101 | 321 | 530 | 0 | 163 | 72 | 235 | 0 | 0 | 0 | 0 | 135 | 465 | 0 | 600 | 1365 |
| 05:45 PM | 118 | 89 | 201 | 408 | 0 | 253 | 60 | 313 | 0 | 0 | 0 | 0 | 61 | 448 | 0 | 509 | 1230 |
| Total | 477 | 403 | 1150 | 2030 | 0 | 829 | 296 | 1125 | 0 | 0 | 0 | 0 | 430 | 1954 | 0 | 2384 | 5539 |
| Grand Total | 953 | 694 | 2267 | 3914 | 0 | 1623 | 557 | 2180 | 0 | 0 | 0 | 0 | 988 | 4096 | 0 | 5084 | 11178 |
| Apprch % | 24.3 | 17.7 | 57.9 | | 0 | 74.4 | 25.6 | | 0 | 0 | 0 | | 19.4 | 80.6 | 0 | | |
| Total % | 8.5 | 6.2 | 20.3 | 35 | 0 | 14.5 | 5 | 19.5 | 0 | 0 | 0 | 0 | 8.8 | 36.6 | 0 | 45.5 | |
| PC | 918 | 682 | 2253 | 3853 | 0 | 1575 | 548 | 2123 | 0 | 0 | 0 | 0 | 969 | 4016 | 0 | 4985 | 10961 |
| % PC | 96.3 | 98.3 | 99.4 | 98.4 | 0 | 97 | 98.4 | 97.4 | 0 | 0 | 0 | 0 | 98.1 | 98 | 0 | 98.1 | 98.1 |
| SU | 25 | 8 | 6 | 39 | 0 | 33 | 5 | 38 | 0 | 0 | 0 | 0 | 8 | 32 | 0 | 40 | 117 |
| % SU | 2.6 | 1.2 | 0.3 | 1 | 0 | 2 | 0.9 | 1.7 | 0 | 0 | 0 | 0 | 0.8 | 0.8 | 0 | 0.8 | 1 |
| MU | 10 | 4 | 8 | 22 | 0 | 15 | 4 | 19 | 0 | 0 | 0 | 0 | 11 | 48 | 0 | 59 | 100 |
| % MU | 1 | 0.6 | 0.4 | 0.6 | 0 | 0.9 | 0.7 | 0.9 | 0 | 0 | 0 | 0 | 1.1 | 1.2 | 0 | 1.2 | 0.9 |

| | Paulina St From North | | | | 127th St From East | | | | Paulina St From South | | | | 127th St From West | | | | |
|--|--------------------------|------|------|------------|-----------------------|------|------|------------|--------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 107 | 78 | 304 | 489 | 0 | 192 | 61 | 253 | 0 | 0 | 0 | 0 | 145 | 608 | 0 | 753 | 1495 |
| 04:45 PM | 136 | 64 | 267 | 467 | 0 | 242 | 78 | 320 | 0 | 0 | 0 | 0 | 122 | 575 | 0 | 697 | 1484 |
| 05:00 PM | 128 | 113 | 295 | 536 | 0 | 187 | 87 | 274 | 0 | 0 | 0 | 0 | 132 | 539 | 0 | 671 | 1481 |
| 05:15 PM | 123 | 100 | 333 | 556 | 0 | 226 | 77 | 303 | 0 | 0 | 0 | 0 | 102 | 502 | 0 | 604 | 1463 |
| Total Volume | 494 | 355 | 1199 | 2048 | 0 | 847 | 303 | 1150 | 0 | 0 | 0 | 0 | 501 | 2224 | 0 | 2725 | 5923 |
| % App. Total | 24.1 | 17.3 | 58.5 | | 0 | 73.7 | 26.3 | | 0 | 0 | 0 | | 18.4 | 81.6 | 0 | | |
| PHF | .908 | .785 | .900 | .921 | .000 | .875 | .871 | .898 | .000 | .000 | .000 | .000 | .864 | .914 | .000 | .905 | .990 |

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 1

| Wallace St From North | | | | | | | | | | 127th St From East | | | | | | Wallace St From South | | | | | | Vermont Ave From Southwest | | | | | | 127th St From West | | | | | |
|--------------------------|-------|------------|---|------|------|------|------------|-------|------|-----------------------|-----|------|------------|-------|------|--------------------------|------------|------------|-----------|-----------|------------|-------------------------------|------|------|------|------------|------------|-----------------------|--|--|--|--|--|
| Start Time | Right | Bear Right | | Thru | Left | | App. Total | Right | Thru | Bear Left | | Left | App. Total | Right | Thru | Left | Hard Right | Bear Right | Bear Left | Hard Left | App. Total | Hard Right | Thru | Left | Peds | App. Total | Int. Total | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | 3 | 1 | 0 | 1 | 5 | 129 | 0 | 1 | 91 | 37 | 0 | 2 | 0 | 11 | 8 | 1 | 2 | 0 | 32 | 0 | 0 | 32 | 0 | 63 | 0 | 0 | 63 | 240 | | | | | |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 150 | 0 | 0 | 114 | 36 | 0 | 1 | 4 | 0 | 15 | 0 | 1 | 0 | 50 | 1 | 0 | 51 | 0 | 100 | 0 | 0 | 100 | 316 | | | | | |
| 07:30 AM | 1 | 0 | 0 | 1 | 2 | 185 | 0 | 1 | 139 | 45 | 0 | 3 | 0 | 16 | 13 | 0 | 3 | 0 | 50 | 0 | 0 | 50 | 0 | 95 | 0 | 0 | 95 | 348 | | | | | |
| 07:45 AM | 1 | 1 | 0 | 2 | 4 | 181 | 0 | 6 | 138 | 37 | 0 | 2 | 1 | 19 | 14 | 2 | 1 | 2 | 43 | 0 | 0 | 43 | 0 | 94 | 0 | 1 | 95 | 342 | | | | | |
| Total | 5 | 2 | 0 | 4 | 11 | 645 | 0 | 8 | 482 | 155 | 0 | 10 | 2 | 61 | 45 | 4 | 10 | 2 | 175 | 1 | 0 | 176 | 0 | 352 | 0 | 1 | 353 | 1246 | | | | | |
| 08:00 AM | 1 | 0 | 0 | 1 | 2 | 174 | 0 | 3 | 133 | 38 | 0 | 3 | 1 | 12 | 8 | 0 | 3 | 1 | 43 | 1 | 0 | 44 | 0 | 89 | 0 | 0 | 89 | 321 | | | | | |
| 08:15 AM | 1 | 1 | 0 | 5 | 7 | 124 | 0 | 3 | 95 | 26 | 0 | 5 | 0 | 12 | 6 | 1 | 5 | 0 | 37 | 0 | 0 | 37 | 0 | 125 | 0 | 2 | 127 | 307 | | | | | |
| 08:30 AM | 2 | 0 | 0 | 1 | 3 | 162 | 0 | 3 | 116 | 43 | 0 | 5 | 0 | 15 | 9 | 1 | 5 | 0 | 51 | 0 | 0 | 51 | 0 | 97 | 1 | 4 | 102 | 333 | | | | | |
| 08:45 AM | 3 | 0 | 0 | 3 | 6 | 131 | 0 | 1 | 102 | 28 | 0 | 4 | 1 | 13 | 8 | 0 | 4 | 1 | 38 | 0 | 0 | 38 | 0 | 68 | 0 | 4 | 72 | 260 | | | | | |
| Total | 7 | 1 | 0 | 10 | 18 | 591 | 0 | 10 | 446 | 135 | 0 | 17 | 2 | 52 | 31 | 2 | 17 | 2 | 169 | 1 | 0 | 170 | 0 | 379 | 1 | 10 | 390 | 1221 | | | | | |
| Grand Total | 12 | 3 | 0 | 14 | 29 | 1236 | 0 | 18 | 928 | 290 | 0 | 27 | 4 | 113 | 76 | 6 | 27 | 4 | 344 | 2 | 0 | 346 | 0 | 731 | 1 | 11 | 743 | 2467 | | | | | |
| Approch % | 41.4 | 10.3 | 0 | 48.3 | | | 0 | 1.5 | 75.1 | 23.5 | 0 | | 3.5 | | 67.3 | 5.3 | 23.9 | 3.5 | 0 | 99.4 | 0.6 | 0 | | 98.4 | 0.1 | 1.5 | | | | | | | |
| Total % | 0.5 | 0.1 | 0 | 0.6 | 1.2 | 0.7 | 37.6 | 11.8 | 0 | 50.1 | 3.1 | 0.2 | 1.1 | 0.2 | 4.6 | 3.1 | 0.2 | 1.1 | 0.2 | 13.9 | 0.1 | 0 | 14 | 0 | 29.6 | 0 | 0.4 | 30.1 | | | | | |
| PC | 12 | 3 | 0 | 14 | 29 | 1156 | 0 | 18 | 872 | 266 | 0 | 1156 | 73 | 6 | 26 | 4 | 109 | 0 | 316 | 2 | 0 | 318 | 0 | 674 | 1 | 11 | 686 | 2298 | | | | | |
| % PC | 100 | 100 | 0 | 100 | 100 | 93.5 | 0 | 100 | 94 | 91.7 | 0 | 93.5 | 96.1 | 100 | 96.3 | 100 | 96.5 | 0 | 91.9 | 100 | 0 | 91.9 | 0 | 92.2 | 100 | 100 | 92.3 | 93.1 | | | | | |
| SU | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 0 | 27 | 21 | 0 | 48 | 3 | 0 | 1 | 0 | 4 | 0 | 22 | 0 | 0 | 22 | 0 | 28 | 0 | 0 | 28 | 102 | | | | | |
| % SU | 0 | 0 | 0 | 0 | 0 | 3.9 | 0 | 0 | 2.9 | 7.2 | 0 | 3.9 | 3.9 | 0 | 3.7 | 0 | 3.5 | 0 | 6.4 | 0 | 0 | 6.4 | 0 | 3.8 | 0 | 0 | 3.8 | 4.1 | | | | | |
| MU | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 29 | 3 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 29 | 0 | 0 | 29 | 67 | | | | | |
| % MU | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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127th St, Wallace St and Vemont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 2

Groups Printed- SU

| | Wallace St From North | | | | | 127th St From East | | | | | Wallace St From South | | | | | Vermont Ave From Southwest | | | | | 127th St From West | | | | | | | |
|-------------|--------------------------|------------|------|------|------------|-----------------------|------|-----------|------|------------|--------------------------|------|------|-----------|------------|-------------------------------|------------|-----------|-----------|------------|-----------------------|------|------|------|------------|------------|------|--|
| Start Time | Right | Bear Right | Thru | Left | App. Total | Right | Thru | Bear Left | Left | App. Total | Right | Thru | Left | Hard Left | App. Total | Hard Right | Bear Right | Bear Left | Hard Left | App. Total | Hard Right | Thru | Left | Peds | App. Total | Int. Total | | |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 5 | 15 | |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 4 | 12 | |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 4 | 0 | 0 | 4 | 17 | |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 6 | 14 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 8 | 0 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 19 | 0 | 0 | 19 | 58 | |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 4 | 0 | 13 | 13 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 3 | 18 | |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 8 | |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 7 | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 3 | 15 | |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 13 | 0 | 27 | 27 | 3 | 0 | 1 | 0 | 4 | 4 | 0 | 0 | 4 | 0 | 0 | 9 | 0 | 0 | 9 | 44 | |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 21 | 0 | 48 | 48 | 3 | 0 | 1 | 0 | 4 | 22 | 0 | 0 | 22 | 0 | 0 | 28 | 0 | 0 | 28 | 102 | |
| Approch % | 0 | 0 | 0 | 0 | 0 | 0 | 56.2 | 43.8 | 0 | | | 75 | 0 | 25 | 0 | 0 | 100 | 0 | 0 | | 0 | 0 | 100 | 0 | 0 | | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 26.5 | 20.6 | 0 | 47.1 | 47.1 | 2.9 | 0 | 1 | 0 | 3.9 | 0 | 21.6 | 0 | 0 | 21.6 | 0 | 0 | 27.5 | 0 | 0 | 27.5 | |

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127th St, Wallace St and Vemont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 3

Groups Printed- MU

| | Wallace St From North | | | | | | 127th St From East | | | | | | Wallace St From South | | | | | | Vermont Ave From Southwest | | | | | | 127th St From West | | | | | | |
|-------------|--------------------------|------------|------|------|------------|--|-----------------------|------|-----------|------|------------|--|--------------------------|------|------|-----------|------------|---|-------------------------------|------------|-----------|-----------|------------|---|-----------------------|------|------|------|------------|------------|------|
| Start Time | Right | Bear Right | Thru | Left | App. Total | | Right | Thru | Bear Left | Left | App. Total | | Right | Thru | Left | Hard Left | App. Total | | Hard Right | Bear Right | Bear Left | Hard Left | App. Total | | Right | Thru | Left | Peds | App. Total | Int. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 2 | 0 | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 5 | 1 | 0 | 6 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 7 | 0 | 0 | 7 | 13 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 7 | 0 | 0 | 7 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 5 | 0 | 0 | 5 | 12 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 5 | 0 | 0 | 5 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 4 | 0 | 0 | 4 | 9 |
| Total | 0 | 0 | 0 | 0 | 0 | | 0 | 19 | 1 | 0 | 20 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 1 | | 0 | 16 | 0 | 0 | 16 | 37 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 2 | | 0 | 7 | 0 | 0 | 7 | 11 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 2 | 0 | 4 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 1 | 5 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 4 | 0 | 0 | 4 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 1 | | 0 | 3 | 0 | 0 | 3 | 8 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 2 | | 0 | 2 | 0 | 0 | 2 | 6 |
| Total | 0 | 0 | 0 | 0 | 0 | | 0 | 10 | 2 | 0 | 12 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 5 | 0 | 0 | 5 | | 0 | 13 | 0 | 0 | 13 | 30 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | | 0 | 29 | 3 | 0 | 32 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 6 | 0 | 0 | 6 | | 0 | 29 | 0 | 0 | 29 | 67 |
| Approch % | 0 | 0 | 0 | 0 | 0 | | 0 | 90.6 | 9.4 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 100 | 0 | 0 | 6 | | 0 | 100 | 0 | 0 | 0 | |
| Total % | 0 | 0 | 0 | 0 | 0 | | 0 | 43.3 | 4.5 | 0 | 47.8 | | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 9 | 0 | 0 | 9 | | 0 | 43.3 | 0 | 0 | 0 | 43.3 |

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127th St, Wallace St and Vemont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/23/2012
Page No : 4

| Groups Printed- Peds & Bikes | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-------|------|------|-------|-------------------|------|------|-------|-------|--------------------|------|-------|-------|------|------------------------|-------|-------|------|------|-------------------|-------|------|------|-------|
| Wallace St | | | | | 127th St | | | | | Wallace St | | | | | Vermont Ave | | | | | 127th St | | | | |
| Crossing North Leg | | | | | Crossing East Leg | | | | | Crossing South Leg | | | | | Crossing Southwest Leg | | | | | Crossing West Leg | | | | |
| | Bikes | Peds | App. | Total | Bikes | Peds | App. | Total | Bikes | Peds | App. | Total | Bikes | Peds | App. | Total | Bikes | Peds | App. | Total | Bikes | Peds | App. | Total |
| Start Time | | | | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | 0 | 2 | | 2 | 0 | 0 | | 0 | 0 | 2 | | 2 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 |
| 07:15 AM | 0 | 2 | | 2 | 0 | 1 | | 1 | 0 | 5 | | 5 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 |
| 07:30 AM | 0 | 2 | | 2 | 0 | 0 | | 0 | 1 | 3 | | 4 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 |
| 07:45 AM | 0 | 1 | | 1 | 0 | 0 | | 0 | 0 | 1 | | 1 | 0 | 0 | | 0 | 0 | 0 | 1 | | 0 | 1 | | 1 |
| Total | 0 | 7 | | 7 | 0 | 1 | | 1 | 1 | 11 | | 12 | 0 | 0 | | 0 | 0 | 0 | 1 | | 0 | 1 | | 21 |
| 08:00 AM | 0 | 1 | | 1 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 |
| 08:15 AM | 0 | 2 | | 2 | 0 | 0 | | 0 | 0 | 3 | | 3 | 0 | 0 | | 0 | 0 | 2 | 2 | | 0 | 2 | | 7 |
| 08:30 AM | 0 | 5 | | 5 | 0 | 4 | | 4 | 0 | 6 | | 6 | 0 | 0 | | 0 | 0 | 0 | 4 | | 0 | 4 | | 19 |
| 08:45 AM | 1 | 2 | | 3 | 0 | 1 | | 1 | 1 | 5 | | 5 | 0 | 0 | | 0 | 0 | 4 | 4 | | 0 | 4 | | 13 |
| Total | 1 | 10 | | 11 | 0 | 5 | | 5 | 5 | 14 | | 14 | 0 | 0 | | 0 | 0 | 10 | 10 | | 0 | 10 | | 40 |
| Grand Total | 1 | 17 | | 18 | 0 | 6 | | 6 | 6 | 25 | | 26 | 0 | 0 | | 0 | 0 | 11 | 11 | | 0 | 11 | | 61 |
| Approch % | 5.6 | 94.4 | | | 0 | 100 | | | | 3.8 | | 96.2 | 0 | 0 | | 0 | 0 | 100 | | | 0 | 100 | | |
| Total % | 1.6 | 27.9 | | 29.5 | 0 | 9.8 | | 9.8 | 9.8 | 41 | | 42.6 | 0 | 0 | | 0 | 0 | 18 | | | 0 | 18 | | |

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127th St, Wallace St and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wallace St From North | | | | | 127th St From East | | | | | Wallace St From South | | | | | Vermont Ave From Southwest | | | | | 127th St From West | | | | | | |
|-------------|--------------------------|------------|------|------|------------|-----------------------|------|-----------|------|------------|--------------------------|------|------|-----------|------------|-------------------------------|------------|-----------|-----------|------------|-----------------------|-------|------|------|------|------------|------------|
| Start Time | Right | Bear Right | Thru | Left | App. Total | Right | Thru | Bear Left | Left | App. Total | Right | Thru | Left | Hard Left | App. Total | Bear Right | Hard Right | Bear Left | Hard Left | App. Total | Hard Right | Right | Thru | Left | Peds | App. Total | Int. Total |
| 04:00 PM | 1 | 0 | 0 | 3 | 4 | 7 | 145 | 48 | 0 | 200 | 4 | 2 | 2 | 0 | 8 | 0 | 62 | 0 | 0 | 62 | 0 | 0 | 138 | 1 | 0 | 139 | 413 |
| 04:15 PM | 4 | 0 | 0 | 2 | 6 | 4 | 141 | 44 | 0 | 189 | 3 | 1 | 2 | 0 | 6 | 0 | 52 | 2 | 0 | 54 | 0 | 0 | 146 | 1 | 0 | 147 | 402 |
| 04:30 PM | 3 | 1 | 0 | 0 | 4 | 1 | 130 | 50 | 0 | 181 | 8 | 1 | 3 | 2 | 14 | 0 | 60 | 1 | 1 | 62 | 0 | 0 | 140 | 2 | 0 | 142 | 403 |
| 04:45 PM | 1 | 0 | 0 | 4 | 5 | 4 | 131 | 56 | 0 | 191 | 8 | 0 | 3 | 0 | 11 | 0 | 44 | 0 | 0 | 44 | 0 | 0 | 158 | 0 | 0 | 158 | 409 |
| Total | 9 | 1 | 0 | 9 | 19 | 16 | 547 | 198 | 0 | 761 | 23 | 4 | 10 | 2 | 39 | 0 | 218 | 3 | 1 | 222 | 0 | 0 | 582 | 4 | 0 | 586 | 1627 |
| 05:00 PM | 1 | 1 | 0 | 2 | 4 | 0 | 119 | 47 | 0 | 166 | 10 | 1 | 1 | 1 | 13 | 0 | 61 | 0 | 0 | 61 | 0 | 0 | 163 | 1 | 0 | 164 | 408 |
| 05:15 PM | 1 | 1 | 0 | 2 | 4 | 5 | 132 | 49 | 0 | 186 | 12 | 4 | 2 | 1 | 19 | 0 | 67 | 1 | 0 | 68 | 0 | 0 | 168 | 0 | 1 | 169 | 446 |
| 05:30 PM | 2 | 0 | 0 | 2 | 4 | 7 | 115 | 49 | 0 | 171 | 9 | 1 | 3 | 1 | 14 | 0 | 51 | 1 | 0 | 52 | 0 | 0 | 175 | 0 | 2 | 177 | 418 |
| 05:45 PM | 1 | 1 | 0 | 2 | 4 | 4 | 113 | 53 | 0 | 170 | 10 | 2 | 3 | 0 | 15 | 0 | 63 | 1 | 0 | 64 | 0 | 0 | 122 | 1 | 6 | 129 | 332 |
| Total | 5 | 3 | 0 | 8 | 16 | 16 | 479 | 198 | 0 | 693 | 41 | 8 | 9 | 3 | 61 | 0 | 242 | 3 | 0 | 245 | 0 | 0 | 628 | 2 | 9 | 639 | 1654 |
| Grand Total | 14 | 4 | 0 | 17 | 35 | 32 | 1026 | 396 | 0 | 1454 | 64 | 12 | 19 | 5 | 100 | 0 | 460 | 6 | 1 | 467 | 0 | 0 | 1210 | 6 | 9 | 1225 | 3281 |
| Approach % | 40 | 11.4 | 0 | 48.6 | 2.2 | 70.6 | 27.2 | 0 | | | 64 | 12 | 19 | 5 | | 98.5 | 1.3 | 0.2 | | | 0 | 98.8 | 0.5 | 0.7 | | | |
| Total % | 0.4 | 0.1 | 0 | 0.5 | 1.1 | 31.3 | 12.1 | 0 | 44.3 | 2 | 0.4 | 0.6 | 0.2 | 3 | | 14 | 0.2 | | 14.2 | 0 | 0 | 36.9 | 0.2 | 0.3 | 37.3 | | |
| PC | 14 | 4 | 0 | 17 | 35 | 31 | 1003 | 382 | 0 | 1416 | 63 | 12 | 18 | 5 | 98 | 0 | 454 | 6 | 1 | 461 | 0 | 0 | 1187 | 5 | 7 | 1199 | 3209 |
| % PC | 100 | 100 | 0 | 100 | 100 | 96.9 | 97.8 | 96.5 | 0 | 97.4 | 98.4 | 100 | 94.7 | 100 | 98 | 0 | 98.7 | 100 | 100 | 98.7 | 0 | 0 | 98.1 | 83.3 | 77.8 | 97.9 | 97.8 |
| SU | 0 | 0 | 0 | 0 | 0 | 1 | 13 | 7 | 0 | 21 | 1 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 14 | 1 | 2 | 17 | 44 |
| % SU | 0 | 0 | 0 | 0 | 0 | 3.1 | 1.3 | 1.8 | 0 | 1.4 | 1.6 | 0 | 5.3 | 0 | 2 | 0 | 0.9 | 0 | 0 | 0.9 | 0 | 0 | 1.2 | 16.7 | 22.2 | 1.4 | 1.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 9 | 0 | 0 | 9 | 28 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.8 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0.4 | 0 | 0 | 0.7 | 0 | 0 | 0.7 | 0.9 | |

| | Wallace St From North | | | | | 127th St From East | | | | | Wallace St From South | | | | | Vermont Ave From Southwest | | | | | 127th St From West | | | | | | |
|--|--------------------------|------------|------|------|------------|-----------------------|------|-----------|------|------------|--------------------------|------|-----------|------------|------------|-------------------------------|-----------|-----------|------------|------------|-----------------------|------|------|------|------------|------------|------|
| Start Time | Right | Bear Right | Thru | Left | App. Total | Right | Thru | Bear Left | Left | App. Total | Right | Thru | Hard Left | App. Total | Hard Right | Bear Right | Bear Left | Hard Left | App. Total | Hard Right | Right | Thru | Left | Peds | App. Total | Int. Total | |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 1 | 0 | 0 | 4 | 5 | 4 | 131 | 56 | 0 | 191 | 8 | 0 | 3 | 0 | 11 | 0 | 44 | 0 | 0 | 44 | 0 | 0 | 158 | 0 | 0 | 158 | 409 |
| 05:00 PM | 1 | 1 | 0 | 2 | 4 | 0 | 119 | 47 | 0 | 166 | 10 | 1 | 1 | 1 | 13 | 0 | 61 | 0 | 0 | 61 | 0 | 0 | 163 | 1 | 0 | 164 | 408 |
| 05:15 PM | 1 | 1 | 0 | 2 | 4 | 5 | 132 | 49 | 0 | 186 | 12 | 4 | 2 | 1 | 19 | 0 | 67 | 1 | 0 | 68 | 0 | 0 | 168 | 0 | 1 | 169 | 446 |
| 05:30 PM | 2 | 0 | 0 | 2 | 4 | 7 | 115 | 49 | 0 | 171 | 9 | 1 | 3 | 1 | 14 | 0 | 51 | 1 | 0 | 52 | 0 | 0 | 175 | 0 | 2 | 177 | 418 |
| Total Volume | 5 | 2 | 0 | 10 | 17 | 16 | 497 | 201 | 0 | 714 | 39 | 6 | 9 | 3 | 57 | 0 | 223 | 2 | 0 | 225 | 0 | 0 | 664 | 1 | 3 | 668 | 1681 |
| % App. Total | 29.4 | 11.8 | 0 | 58.8 | | 2.2 | 69.6 | 28.2 | 0 | | 68.4 | 10.5 | 15.8 | 5.3 | | 0 | 99.1 | 0.9 | 0 | | 0 | 0 | 99.4 | 0.1 | 0.4 | | |
| PHF | .625 | .500 | .000 | .625 | .850 | .571 | .941 | .897 | .000 | .935 | .813 | .375 | .750 | .750 | .750 | .000 | .832 | .500 | .000 | .827 | .000 | .000 | .949 | .250 | .375 | .944 | .942 |

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:45 PM

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 6

A-319

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127th St, Wallace St and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : FINAL COMB
Site Code : 00000000
Start Date : 5/23/2012
Page No : 7

Groups Printed- MU

| Wallace St From North | | | | | | | | | | 127th St From East | | | | | Wallace St From South | | | | | Vermont Ave From Southwest | | | | | 127th St From West | | | | |
|--------------------------|-------|------------|------|------|------------|-------|------|-----------|------|-----------------------|-------|------|------|-----------|--------------------------|------------|------------|-----------|-----------|-------------------------------|------------|------|------|------|-----------------------|------------|---|--|--|
| Start Time | Right | Bear Right | Thru | Left | App. Total | Right | Thru | Bear Left | Left | App. Total | Right | Thru | Left | Hard Left | App. Total | Hard Right | Bear Right | Bear Left | Hard Left | App. Total | Hard Right | Thru | Left | Peds | App. Total | Int. Total | | | |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 5 | | |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 7 | | | |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 5 | | | |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 6 | 21 | | | |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 3 | | | |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | | | |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 7 | | | |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 9 | 28 | | | |
| Approch % | 0 | 0 | 0 | 0 | 0 | 0 | 58.8 | 41.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | | | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 35.7 | 25 | 0 | 60.7 | 0 | 0 | 0 | 0 | 0 | 7.1 | 7.1 | 0 | 0 | 7.1 | 0 | 32.1 | 0 | 0 | 32.1 | | | | |

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127th St, Wallace St and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/23/2012
Page No : 8

| Groups Printed- Peds & Bikes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-------|------|------------|--|--|-------------------|------|------------|--|--|-------|--------------------|------------|--|--|-------|------|------------------------|--|--|-------|------|------------|-------------------|--|--|--|--|--|
| Wallace St | | | | | | 127th St | | | | | | Wallace St | | | | | | Vermont Ave | | | | | | 127th St | | | | | |
| Crossing North Leg | | | | | | Crossing East Leg | | | | | | Crossing South Leg | | | | | | Crossing Southwest Leg | | | | | | Crossing West Leg | | | | | |
| Start Time | Bikes | Peds | App. Total | | | Bikes | Peds | App. Total | | | Bikes | Peds | App. Total | | | Bikes | Peds | App. Total | | | Bikes | Peds | App. Total | Int. Total | | | | | |
| 04:00 PM | 1 | 1 | 2 | | | 0 | 0 | 0 | | | 0 | 3 | 3 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 5 | | | | | |
| 04:15 PM | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 1 | 1 | 2 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 4 | | | | | |
| 04:30 PM | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 4 | | | | | |
| 04:45 PM | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 0 | 1 | 1 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 3 | | | | | |
| Total | 1 | 7 | 8 | | | 0 | 0 | 0 | | | 1 | 7 | 8 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 16 | | | | | |
| 05:00 PM | 0 | 1 | 1 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | 1 | | | | | |
| 05:15 PM | 0 | 5 | 5 | | | 2 | 2 | 4 | | | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 1 | 0 | 1 | 12 | | | | | |
| 05:30 PM | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 2 | 2 | | | 0 | 0 | 0 | | | 0 | 2 | 2 | 4 | | | | | |
| 05:45 PM | 0 | 1 | 1 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 1 | 5 | 6 | 7 | | | | | |
| Total | 0 | 7 | 7 | | | 2 | 2 | 4 | | | 0 | 4 | 4 | | | 0 | 0 | 0 | | | 2 | 7 | 9 | 24 | | | | | |
| Grand Total | 1 | 14 | 15 | | | 2 | 2 | 4 | | | 1 | 11 | 12 | | | 0 | 0 | 0 | | | 2 | 7 | 9 | 40 | | | | | |
| Apprch % | 6.7 | 93.3 | | | | 50 | 50 | | | | 8.3 | 91.7 | | | | 0 | 0 | | | | 22.2 | 77.8 | | | | | | | |
| Total % | 2.5 | 35 | 37.5 | | | 5 | 5 | 10 | | | 2.5 | 27.5 | 30 | | | 0 | 0 | 0 | | | 5 | 17.5 | 22.5 | | | | | | |

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130th St and Ellis Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/23/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 133 | 41 | 174 | 12 | 0 | 8 | 20 | 8 | 81 | 0 | 89 | 283 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 140 | 44 | 184 | 24 | 0 | 8 | 32 | 8 | 114 | 0 | 122 | 338 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 147 | 58 | 205 | 31 | 0 | 17 | 48 | 22 | 127 | 0 | 149 | 402 |
| 07:45 AM | 0 | 0 | 0 | 0 | 7 | 146 | 89 | 242 | 59 | 0 | 18 | 77 | 20 | 118 | 0 | 138 | 457 |
| Total | 0 | 0 | 0 | 0 | 7 | 566 | 232 | 805 | 126 | 0 | 51 | 177 | 58 | 440 | 0 | 498 | 1480 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 150 | 52 | 202 | 31 | 0 | 14 | 45 | 19 | 107 | 0 | 126 | 373 |
| 08:15 AM | 0 | 0 | 1 | 1 | 1 | 109 | 28 | 138 | 23 | 0 | 7 | 30 | 8 | 102 | 1 | 111 | 280 |
| 08:30 AM | 0 | 0 | 1 | 1 | 0 | 111 | 34 | 145 | 27 | 0 | 8 | 35 | 6 | 125 | 0 | 131 | 312 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 138 | 46 | 184 | 28 | 0 | 10 | 38 | 9 | 113 | 1 | 123 | 345 |
| Total | 0 | 0 | 2 | 2 | 1 | 508 | 160 | 669 | 109 | 0 | 39 | 148 | 42 | 447 | 2 | 491 | 1310 |
| Grand Total | 0 | 0 | 2 | 2 | 8 | 1074 | 392 | 1474 | 235 | 0 | 90 | 325 | 100 | 887 | 2 | 989 | 2790 |
| Apprch % | 0 | 0 | 100 | | 0.5 | 72.9 | 26.6 | | 72.3 | 0 | 27.7 | | 10.1 | 89.7 | 0.2 | | |
| Total % | 0 | 0 | 0.1 | 0.1 | 0.3 | 38.5 | 14.1 | 52.8 | 8.4 | 0 | 3.2 | 11.6 | 3.6 | 31.8 | 0.1 | 35.4 | |
| PC | 0 | 0 | 1 | 1 | 7 | 980 | 375 | 1362 | 224 | 0 | 73 | 297 | 96 | 807 | 1 | 904 | 2564 |
| % PC | 0 | 0 | 50 | 50 | 87.5 | 91.2 | 95.7 | 92.4 | 95.3 | 0 | 81.1 | 91.4 | 96 | 91 | 50 | 91.4 | 91.9 |
| SU | 0 | 0 | 0 | 0 | 0 | 50 | 15 | 65 | 10 | 0 | 17 | 27 | 4 | 43 | 1 | 48 | 140 |
| % SU | 0 | 0 | 0 | 0 | 0 | 4.7 | 3.8 | 4.4 | 4.3 | 0 | 18.9 | 8.3 | 4 | 4.8 | 50 | 4.9 | 5 |
| MU | 0 | 0 | 1 | 1 | 1 | 44 | 2 | 47 | 1 | 0 | 0 | 1 | 0 | 37 | 0 | 37 | 86 |
| % MU | 0 | 0 | 50 | 50 | 12.5 | 4.1 | 0.5 | 3.2 | 0.4 | 0 | 0 | 0.3 | 0 | 4.2 | 0 | 3.7 | 3.1 |

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|--|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 140 | 44 | 184 | 24 | 0 | 8 | 32 | 8 | 114 | 0 | 122 | 338 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 147 | 58 | 205 | 31 | 0 | 17 | 48 | 22 | 127 | 0 | 149 | 402 |
| 07:45 AM | 0 | 0 | 0 | 0 | 7 | 146 | 89 | 242 | 59 | 0 | 18 | 77 | 20 | 118 | 0 | 138 | 457 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 150 | 52 | 202 | 31 | 0 | 14 | 45 | 19 | 107 | 0 | 126 | 373 |
| Total Volume | 0 | 0 | 0 | 0 | 7 | 583 | 243 | 833 | 145 | 0 | 57 | 202 | 69 | 466 | 0 | 535 | 1570 |
| % App. Total | 0 | 0 | 0 | | 0.8 | 70 | 29.2 | | 71.8 | 0 | 28.2 | | 12.9 | 87.1 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .250 | .972 | .683 | .861 | .614 | .000 | .792 | .656 | .784 | .917 | .000 | .898 | .859 |

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130th St and Ellis Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 2

Groups Printed- SU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 7 | 0 | 0 | 4 | 4 | 1 | 6 | 0 | 7 | 18 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 9 | 1 | 0 | 3 | 4 | 0 | 10 | 0 | 10 | 23 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 12 | 3 | 0 | 5 | 8 | 3 | 4 | 0 | 7 | 27 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 3 | 0 | 2 | 5 | 0 | 7 | 0 | 7 | 18 |
| Total | 0 | 0 | 0 | 0 | 0 | 24 | 10 | 34 | 7 | 0 | 14 | 21 | 4 | 27 | 0 | 31 | 86 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 12 | 0 | 0 | 3 | 3 | 0 | 6 | 0 | 6 | 21 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 3 | 0 | 3 | 8 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 13 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 8 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 12 |
| Total | 0 | 0 | 0 | 0 | 0 | 26 | 5 | 31 | 3 | 0 | 3 | 6 | 0 | 16 | 1 | 17 | 54 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 50 | 15 | 65 | 10 | 0 | 17 | 27 | 4 | 43 | 1 | 48 | 140 |
| Apprch % | 0 | 0 | 0 | | 0 | 76.9 | 23.1 | | 37 | 0 | 63 | | 8.3 | 89.6 | 2.1 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 35.7 | 10.7 | 46.4 | 7.1 | 0 | 12.1 | 19.3 | 2.9 | 30.7 | 0.7 | 34.3 | |

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7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 3

Groups Printed- MU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 9 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 13 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 15 | 38 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 16 |
| 08:15 AM | 0 | 0 | 1 | 1 | 1 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 14 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 11 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 7 |
| Total | 0 | 0 | 1 | 1 | 1 | 22 | 1 | 24 | 1 | 0 | 0 | 1 | 0 | 22 | 0 | 22 | 48 |
| Grand Total | 0 | 0 | 1 | 1 | 1 | 44 | 2 | 47 | 1 | 0 | 0 | 1 | 0 | 37 | 0 | 37 | 86 |
| Apprch % | 0 | 0 | 100 | | 2.1 | 93.6 | 4.3 | | 100 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 1.2 | 1.2 | 1.2 | 51.2 | 2.3 | 54.7 | 1.2 | 0 | 0 | 1.2 | 0 | 43 | 0 | 43 | |

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130th St and Ellis Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/23/2012
Page No : 4

Groups Printed- PC - SU - MU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 134 | 24 | 158 | 37 | 0 | 14 | 51 | 11 | 223 | 0 | 234 | 443 |
| 04:15 PM | 0 | 0 | 0 | 0 | 1 | 151 | 27 | 179 | 33 | 0 | 13 | 46 | 12 | 167 | 0 | 179 | 404 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 160 | 26 | 186 | 33 | 0 | 8 | 41 | 5 | 218 | 0 | 223 | 450 |
| 04:45 PM | 0 | 0 | 1 | 1 | 1 | 144 | 18 | 163 | 36 | 0 | 8 | 44 | 10 | 176 | 0 | 186 | 394 |
| Total | 0 | 0 | 1 | 1 | 2 | 589 | 95 | 686 | 139 | 0 | 43 | 182 | 38 | 784 | 0 | 822 | 1691 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 164 | 25 | 189 | 33 | 0 | 7 | 40 | 9 | 192 | 1 | 202 | 431 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 132 | 18 | 151 | 23 | 0 | 13 | 36 | 10 | 209 | 0 | 219 | 406 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 141 | 26 | 167 | 32 | 0 | 20 | 52 | 6 | 218 | 0 | 224 | 443 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 150 | 25 | 175 | 33 | 0 | 8 | 41 | 7 | 204 | 0 | 211 | 427 |
| Total | 0 | 0 | 0 | 0 | 1 | 587 | 94 | 682 | 121 | 0 | 48 | 169 | 32 | 823 | 1 | 856 | 1707 |
| Grand Total | 0 | 0 | 1 | 1 | 3 | 1176 | 189 | 1368 | 260 | 0 | 91 | 351 | 70 | 1607 | 1 | 1678 | 3398 |
| Apprch % | 0 | 0 | 100 | | 0.2 | 86 | 13.8 | | 74.1 | 0 | 25.9 | | 4.2 | 95.8 | 0.1 | | |
| Total % | 0 | 0 | 0 | 0 | 0.1 | 34.6 | 5.6 | 40.3 | 7.7 | 0 | 2.7 | 10.3 | 2.1 | 47.3 | 0 | 49.4 | |
| PC | 0 | 0 | 1 | 1 | 1 | 1135 | 184 | 1320 | 256 | 0 | 90 | 346 | 69 | 1571 | 1 | 1641 | 3308 |
| % PC | 0 | 0 | 100 | 100 | 33.3 | 96.5 | 97.4 | 96.5 | 98.5 | 0 | 98.9 | 98.6 | 98.6 | 97.8 | 100 | 97.8 | 97.4 |
| SU | 0 | 0 | 0 | 0 | 1 | 21 | 4 | 26 | 4 | 0 | 1 | 5 | 1 | 25 | 0 | 26 | 57 |
| % SU | 0 | 0 | 0 | 0 | 33.3 | 1.8 | 2.1 | 1.9 | 1.5 | 0 | 1.1 | 1.4 | 1.4 | 1.6 | 0 | 1.5 | 1.7 |
| MU | 0 | 0 | 0 | 0 | 1 | 20 | 1 | 22 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 33 |
| % MU | 0 | 0 | 0 | 0 | 33.3 | 1.7 | 0.5 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 0.7 | 1 |

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|--|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 164 | 25 | 189 | 33 | 0 | 7 | 40 | 9 | 192 | 1 | 202 | 431 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 132 | 18 | 151 | 23 | 0 | 13 | 36 | 10 | 209 | 0 | 219 | 406 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 141 | 26 | 167 | 32 | 0 | 20 | 52 | 6 | 218 | 0 | 224 | 443 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 150 | 25 | 175 | 33 | 0 | 8 | 41 | 7 | 204 | 0 | 211 | 427 |
| Total Volume | 0 | 0 | 0 | 0 | 1 | 587 | 94 | 682 | 121 | 0 | 48 | 169 | 32 | 823 | 1 | 856 | 1707 |
| % App. Total | 0 | 0 | 0 | | 0.1 | 86.1 | 13.8 | | 71.6 | 0 | 28.4 | | 3.7 | 96.1 | 0.1 | | |
| PHF | .000 | .000 | .000 | .000 | .250 | .895 | .904 | .902 | .917 | .000 | .600 | .813 | .800 | .944 | .250 | .955 | .963 |

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130th St and Ellis Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 5

Groups Printed- SU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 9 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 5 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 6 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 8 |
| Total | 0 | 0 | 0 | 0 | 1 | 12 | 1 | 14 | 2 | 0 | 1 | 3 | 1 | 10 | 0 | 11 | 28 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 2 | 0 | 0 | 2 | 0 | 4 | 0 | 4 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 6 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 7 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 6 |
| Total | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 12 | 2 | 0 | 0 | 2 | 0 | 15 | 0 | 15 | 29 |
| Grand Total | 0 | 0 | 0 | 0 | 1 | 21 | 4 | 26 | 4 | 0 | 1 | 5 | 1 | 25 | 0 | 26 | 57 |
| Apprch % | 0 | 0 | 0 | | 3.8 | 80.8 | 15.4 | | 80 | 0 | 20 | | 3.8 | 96.2 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 1.8 | 36.8 | 7 | 45.6 | 7 | 0 | 1.8 | 8.8 | 1.8 | 43.9 | 0 | 45.6 | |

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130th St and Ellis Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/23/2012

Page No : 6

Groups Printed- MU

| | Water Treatment Plant Entrance From North | | | | 130th St From East | | | | Ellis Ave From South | | | | 130th St From West | | | | |
|-------------|---|------|------|------------|-----------------------|------|------|------------|-------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 |
| 04:15 PM | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 16 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 17 |
| Grand Total | 0 | 0 | 0 | 0 | 1 | 20 | 1 | 22 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 33 |
| Apprch % | 0 | 0 | 0 | | 4.5 | 90.9 | 4.5 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 3 | 60.6 | 3 | 66.7 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | |

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130th St and Indiana Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/3/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 88 | 12 | 100 | 16 | 0 | 49 | 65 | 23 | 96 | 0 | 119 | 284 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 101 | 18 | 119 | 11 | 0 | 58 | 69 | 20 | 104 | 0 | 124 | 312 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 99 | 22 | 121 | 16 | 0 | 58 | 74 | 21 | 136 | 0 | 157 | 352 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 138 | 26 | 164 | 20 | 0 | 120 | 140 | 22 | 100 | 0 | 122 | 426 |
| Total | 0 | 0 | 0 | 0 | 0 | 426 | 78 | 504 | 63 | 0 | 285 | 348 | 86 | 436 | 0 | 522 | 1374 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 106 | 22 | 128 | 12 | 0 | 83 | 95 | 49 | 95 | 0 | 144 | 367 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 129 | 22 | 151 | 16 | 0 | 65 | 81 | 35 | 89 | 0 | 124 | 356 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 131 | 26 | 157 | 30 | 0 | 26 | 56 | 22 | 95 | 0 | 117 | 330 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 109 | 33 | 142 | 27 | 0 | 63 | 90 | 40 | 92 | 0 | 132 | 364 |
| Total | 0 | 0 | 0 | 0 | 0 | 475 | 103 | 578 | 85 | 0 | 237 | 322 | 146 | 371 | 0 | 517 | 1417 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 901 | 181 | 1082 | 148 | 0 | 522 | 670 | 232 | 807 | 0 | 1039 | 2791 |
| Apprch % | 0 | 0 | 0 | 0 | 0 | 83.3 | 16.7 | | 22.1 | 0 | 77.9 | | 22.3 | 77.7 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 32.3 | 6.5 | 38.8 | 5.3 | 0 | 18.7 | 24 | 8.3 | 28.9 | 0 | 37.2 | |
| PC | 0 | 0 | 0 | 0 | 0 | 827 | 163 | 990 | 139 | 0 | 505 | 644 | 216 | 723 | 0 | 939 | 2573 |
| % PC | 0 | 0 | 0 | 0 | 0 | 91.8 | 90.1 | 91.5 | 93.9 | 0 | 96.7 | 96.1 | 93.1 | 89.6 | 0 | 90.4 | 92.2 |
| SU | 0 | 0 | 0 | 0 | 0 | 48 | 15 | 63 | 5 | 0 | 14 | 19 | 15 | 55 | 0 | 70 | 152 |
| % SU | 0 | 0 | 0 | 0 | 0 | 5.3 | 8.3 | 5.8 | 3.4 | 0 | 2.7 | 2.8 | 6.5 | 6.8 | 0 | 6.7 | 5.4 |
| MU | 0 | 0 | 0 | 0 | 0 | 26 | 3 | 29 | 4 | 0 | 3 | 7 | 1 | 29 | 0 | 30 | 66 |
| % MU | 0 | 0 | 0 | 0 | 0 | 2.9 | 1.7 | 2.7 | 2.7 | 0 | 0.6 | 1 | 0.4 | 3.6 | 0 | 2.9 | 2.4 |

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------------|-----------|------------|---------------------------|------|------------|------------|-----------------------|------------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 99 | 22 | 121 | 16 | 0 | 58 | 74 | 21 | 136 | 0 | 157 | 352 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 138 | 26 | 164 | 20 | 0 | 120 | 140 | 22 | 100 | 0 | 122 | 426 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 106 | 22 | 128 | 12 | 0 | 83 | 95 | 49 | 95 | 0 | 144 | 367 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 129 | 22 | 151 | 16 | 0 | 65 | 81 | 35 | 89 | 0 | 124 | 356 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 472 | 92 | 564 | 64 | 0 | 326 | 390 | 127 | 420 | 0 | 547 | 1501 |
| % App. Total | 0 | 0 | 0 | 0 | 0 | 83.7 | 16.3 | | 16.4 | 0 | 83.6 | | 23.2 | 76.8 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .855 | .885 | .860 | .800 | .000 | .679 | .696 | .648 | .772 | .000 | .871 | .881 |

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130th St and Indiana Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 2

Groups Printed- SU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 1 | 0 | 2 | 3 | 3 | 5 | 0 | 8 | 15 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 9 | 5 | 14 | 0 | 0 | 3 | 3 | 1 | 11 | 0 | 12 | 29 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 9 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 7 | 16 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 0 | 0 | 2 | 2 | 0 | 10 | 0 | 10 | 19 |
| Total | 0 | 0 | 0 | 0 | 0 | 26 | 8 | 34 | 1 | 0 | 7 | 8 | 6 | 31 | 0 | 37 | 79 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 1 | 1 | 5 | 7 | 0 | 12 | 17 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 1 | 0 | 3 | 4 | 1 | 9 | 0 | 10 | 21 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 9 | 1 | 0 | 1 | 2 | 2 | 4 | 0 | 6 | 17 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 9 | 2 | 0 | 2 | 4 | 1 | 4 | 0 | 5 | 18 |
| Total | 0 | 0 | 0 | 0 | 0 | 22 | 7 | 29 | 4 | 0 | 7 | 11 | 9 | 24 | 0 | 33 | 73 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 48 | 15 | 63 | 5 | 0 | 14 | 19 | 15 | 55 | 0 | 70 | 152 |
| Apprch % | 0 | 0 | 0 | | 0 | 76.2 | 23.8 | | 26.3 | 0 | 73.7 | | 21.4 | 78.6 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 31.6 | 9.9 | 41.4 | 3.3 | 0 | 9.2 | 12.5 | 9.9 | 36.2 | 0 | 46.1 | |

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130th St and Indiana Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 3

Groups Printed- MU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 7 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 9 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 5 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 11 |
| Total | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 16 | 1 | 0 | 1 | 2 | 0 | 14 | 0 | 14 | 32 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 8 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 2 | 3 | 0 | 5 | 0 | 5 | 11 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 7 | 2 | 0 | 0 | 2 | 0 | 4 | 0 | 4 | 13 |
| Total | 0 | 0 | 0 | 0 | 0 | 10 | 3 | 13 | 3 | 0 | 2 | 5 | 1 | 15 | 0 | 16 | 34 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 26 | 3 | 29 | 4 | 0 | 3 | 7 | 1 | 29 | 0 | 30 | 66 |
| Apprch % | 0 | 0 | 0 | | 0 | 89.7 | 10.3 | | 57.1 | 0 | 42.9 | | 3.3 | 96.7 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 39.4 | 4.5 | 43.9 | 6.1 | 0 | 4.5 | 10.6 | 1.5 | 43.9 | 0 | 45.5 | |

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130th St and Indiana Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/3/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Indiana Ave Crossing North Leg | | | 130th St Crossing East Leg | | | Indiana Ave Crossing South Leg | | | 130th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 0 | 0 | 6 |
| Total | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 2 | 0 | 0 | 0 | 6 |
| 08:00 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 1 | 1 | 8 |
| Grand Total | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 5 | 5 | 0 | 1 | 1 | 14 |
| Apprch % | 0 | 0 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 0 | | 0 | 57.1 | 57.1 | 0 | 35.7 | 35.7 | 0 | 7.1 | 7.1 | |

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130th St and Indiana Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/3/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 126 | 34 | 160 | 48 | 0 | 26 | 74 | 58 | 149 | 0 | 207 | 441 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 126 | 28 | 154 | 20 | 0 | 49 | 69 | 53 | 150 | 0 | 203 | 426 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 125 | 23 | 148 | 10 | 0 | 44 | 54 | 30 | 146 | 0 | 176 | 378 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 147 | 21 | 168 | 22 | 0 | 51 | 73 | 48 | 163 | 0 | 211 | 452 |
| Total | 0 | 0 | 0 | 0 | 0 | 524 | 106 | 630 | 100 | 0 | 170 | 270 | 189 | 608 | 0 | 797 | 1697 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 149 | 22 | 171 | 10 | 0 | 38 | 48 | 54 | 145 | 0 | 199 | 418 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 129 | 26 | 155 | 15 | 0 | 52 | 67 | 63 | 152 | 0 | 215 | 437 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 132 | 29 | 161 | 11 | 0 | 31 | 42 | 52 | 149 | 0 | 201 | 404 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 94 | 27 | 121 | 9 | 0 | 37 | 46 | 49 | 116 | 0 | 165 | 332 |
| Total | 0 | 0 | 0 | 0 | 0 | 504 | 104 | 608 | 45 | 0 | 158 | 203 | 218 | 562 | 0 | 780 | 1591 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1028 | 210 | 1238 | 145 | 0 | 328 | 473 | 407 | 1170 | 0 | 1577 | 3288 |
| Apprch % | 0 | 0 | 0 | | 0 | 83 | 17 | | 30.7 | 0 | 69.3 | | 25.8 | 74.2 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 31.3 | 6.4 | 37.7 | 4.4 | 0 | 10 | 14.4 | 12.4 | 35.6 | 0 | 48 | |
| PC | 0 | 0 | 0 | 0 | 0 | 981 | 206 | 1187 | 143 | 0 | 312 | 455 | 397 | 1140 | 0 | 1537 | 3179 |
| % PC | 0 | 0 | 0 | 0 | 0 | 95.4 | 98.1 | 95.9 | 98.6 | 0 | 95.1 | 96.2 | 97.5 | 97.4 | 0 | 97.5 | 96.7 |
| SU | 0 | 0 | 0 | 0 | 0 | 36 | 2 | 38 | 2 | 0 | 16 | 18 | 10 | 21 | 0 | 31 | 87 |
| % SU | 0 | 0 | 0 | 0 | 0 | 3.5 | 1 | 3.1 | 1.4 | 0 | 4.9 | 3.8 | 2.5 | 1.8 | 0 | 2 | 2.6 |
| MU | 0 | 0 | 0 | 0 | 0 | 11 | 2 | 13 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 22 |
| % MU | 0 | 0 | 0 | 0 | 0 | 1.1 | 1 | 1.1 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 | 0.6 | 0.7 |

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|--|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 147 | 21 | 168 | 22 | 0 | 51 | 73 | 48 | 163 | 0 | 211 | 452 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 149 | 22 | 171 | 10 | 0 | 38 | 48 | 54 | 145 | 0 | 199 | 418 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 129 | 26 | 155 | 15 | 0 | 52 | 67 | 63 | 152 | 0 | 215 | 437 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 132 | 29 | 161 | 11 | 0 | 31 | 42 | 52 | 149 | 0 | 201 | 404 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 557 | 98 | 655 | 58 | 0 | 172 | 230 | 217 | 609 | 0 | 826 | 1711 |
| % App. Total | 0 | 0 | 0 | | 0 | 85 | 15 | | 25.2 | 0 | 74.8 | | 26.3 | 73.7 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .935 | .845 | .958 | .659 | .000 | .827 | .788 | .861 | .934 | .000 | .960 | .946 |

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130th St and Indiana Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 6

Groups Printed- SU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 3 | 10 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 2 | 0 | 2 | 4 | 2 | 3 | 0 | 5 | 15 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 3 | 3 | 0 | 6 | 11 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 12 |
| Total | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 23 | 2 | 0 | 5 | 7 | 6 | 12 | 0 | 18 | 48 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 2 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 5 | 5 | 0 | 3 | 0 | 3 | 11 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 3 | 3 | 1 | 3 | 0 | 4 | 10 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 2 | 2 | 1 | 3 | 0 | 4 | 11 |
| Total | 0 | 0 | 0 | 0 | 0 | 14 | 1 | 15 | 0 | 0 | 11 | 11 | 4 | 9 | 0 | 13 | 39 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 36 | 2 | 38 | 2 | 0 | 16 | 18 | 10 | 21 | 0 | 31 | 87 |
| Apprch % | 0 | 0 | 0 | | 0 | 94.7 | 5.3 | | 11.1 | 0 | 88.9 | | 32.3 | 67.7 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 41.4 | 2.3 | 43.7 | 2.3 | 0 | 18.4 | 20.7 | 11.5 | 24.1 | 0 | 35.6 | |

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130th St and Indiana Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/3/2012

Page No : 7

Groups Printed- MU

| | Indiana Ave From North | | | | 130th St From East | | | | Indiana Ave From South | | | | 130th St From West | | | | |
|-------------|---------------------------|------|------|------------|-----------------------|------|------|------------|---------------------------|------|------|------------|-----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 13 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 9 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 11 | 2 | 13 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 22 |
| Apprch % | 0 | 0 | 0 | | 0 | 84.6 | 15.4 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 50 | 9.1 | 59.1 | 0 | 0 | 0 | 0 | 0 | 40.9 | 0 | 40.9 | |

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130th St and Indiana Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/3/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Indiana Ave Crossing North Leg | | | 130th St Crossing East Leg | | | Indiana Ave Crossing South Leg | | | 130th St Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|-------------------------------|------|------------|-----------------------------------|------|------------|-------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Apprch % | 0 | 0 | | 0 | 100 | | 0 | 0 | | 0 | 0 | | |
| Total % | 0 | 0 | | 0 | 100 | 100 | 0 | 0 | | 0 | 0 | | |

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95th St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no ped

Site Code : 00000000

Start Date : 4/26/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 3 | 5 | 0 | 112 | 12 | 124 | 20 | 0 | 31 | 51 | 37 | 131 | 0 | 168 | 348 |
| 07:15 AM | 1 | 1 | 1 | 3 | 0 | 164 | 24 | 188 | 19 | 0 | 33 | 52 | 66 | 154 | 0 | 220 | 463 |
| 07:30 AM | 1 | 3 | 1 | 5 | 0 | 137 | 18 | 155 | 36 | 0 | 41 | 77 | 73 | 212 | 0 | 285 | 522 |
| 07:45 AM | 0 | 5 | 1 | 6 | 0 | 145 | 12 | 157 | 28 | 0 | 26 | 54 | 47 | 179 | 0 | 226 | 443 |
| Total | 2 | 11 | 6 | 19 | 0 | 558 | 66 | 624 | 103 | 0 | 131 | 234 | 223 | 676 | 0 | 899 | 1776 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 140 | 17 | 157 | 23 | 0 | 21 | 44 | 33 | 207 | 0 | 240 | 442 |
| 08:15 AM | 0 | 2 | 1 | 3 | 0 | 153 | 7 | 160 | 19 | 0 | 23 | 42 | 44 | 196 | 0 | 240 | 445 |
| 08:30 AM | 0 | 1 | 0 | 1 | 0 | 150 | 10 | 160 | 18 | 0 | 19 | 37 | 33 | 219 | 0 | 252 | 450 |
| 08:45 AM | 1 | 0 | 1 | 2 | 0 | 135 | 13 | 148 | 16 | 0 | 16 | 32 | 32 | 213 | 0 | 245 | 427 |
| Total | 2 | 3 | 2 | 7 | 0 | 578 | 47 | 625 | 76 | 0 | 79 | 155 | 142 | 835 | 0 | 977 | 1764 |
| Grand Total | 4 | 14 | 8 | 26 | 0 | 1136 | 113 | 1249 | 179 | 0 | 210 | 389 | 365 | 1511 | 0 | 1876 | 3540 |
| Apprch % | 15.4 | 53.8 | 30.8 | | 0 | 91 | 9 | | 46 | 0 | 54 | | 19.5 | 80.5 | 0 | | |
| Total % | 0.1 | 0.4 | 0.2 | 0.7 | 0 | 32.1 | 3.2 | 35.3 | 5.1 | 0 | 5.9 | 11 | 10.3 | 42.7 | 0 | 53 | |
| PC | 4 | 14 | 7 | 25 | 0 | 1034 | 111 | 1145 | 174 | 0 | 158 | 332 | 310 | 1401 | 0 | 1711 | 3213 |
| % PC | 100 | 100 | 87.5 | 96.2 | 0 | 91 | 98.2 | 91.7 | 97.2 | 0 | 75.2 | 85.3 | 84.9 | 92.7 | 0 | 91.2 | 90.8 |
| SU | 0 | 0 | 1 | 1 | 0 | 81 | 2 | 83 | 5 | 0 | 52 | 57 | 55 | 97 | 0 | 152 | 293 |
| % SU | 0 | 0 | 12.5 | 3.8 | 0 | 7.1 | 1.8 | 6.6 | 2.8 | 0 | 24.8 | 14.7 | 15.1 | 6.4 | 0 | 8.1 | 8.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 13 | 34 |
| % MU | 0 | 0 | 0 | 0 | 0 | 1.8 | 0 | 1.7 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0.7 | 1 |

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|--|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 1 | 1 | 1 | 3 | 0 | 164 | 24 | 188 | 19 | 0 | 33 | 52 | 66 | 154 | 0 | 220 | 463 |
| 07:30 AM | 1 | 3 | 1 | 5 | 0 | 137 | 18 | 155 | 36 | 0 | 41 | 77 | 73 | 212 | 0 | 285 | 522 |
| 07:45 AM | 0 | 5 | 1 | 6 | 0 | 145 | 12 | 157 | 28 | 0 | 26 | 54 | 47 | 179 | 0 | 226 | 443 |
| 08:00 AM | 1 | 0 | 0 | 1 | 0 | 140 | 17 | 157 | 23 | 0 | 21 | 44 | 33 | 207 | 0 | 240 | 442 |
| Total Volume | 3 | 9 | 3 | 15 | 0 | 586 | 71 | 657 | 106 | 0 | 121 | 227 | 219 | 752 | 0 | 971 | 1870 |
| % App. Total | 20 | 60 | 20 | | 0 | 89.2 | 10.8 | | 46.7 | 0 | 53.3 | | 22.6 | 77.4 | 0 | | |
| PHF | .750 | .450 | .750 | .625 | .000 | .893 | .740 | .874 | .736 | .000 | .738 | .737 | .750 | .887 | .000 | .852 | .896 |

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95th St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no ped

Site Code : 00000000

Start Date : 4/26/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 8 | 0 | 0 | 6 | 6 | 9 | 20 | 0 | 29 | 43 |
| 07:15 AM | 0 | 0 | 1 | 1 | 0 | 11 | 0 | 11 | 1 | 0 | 8 | 9 | 7 | 13 | 0 | 20 | 41 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 13 | 1 | 0 | 9 | 10 | 6 | 11 | 0 | 17 | 40 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 18 | 0 | 0 | 5 | 5 | 6 | 16 | 0 | 22 | 45 |
| Total | 0 | 0 | 1 | 1 | 0 | 48 | 2 | 50 | 2 | 0 | 28 | 30 | 28 | 60 | 0 | 88 | 169 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 6 | 6 | 8 | 9 | 0 | 17 | 31 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 1 | 0 | 6 | 7 | 8 | 8 | 0 | 16 | 35 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 2 | 0 | 7 | 9 | 5 | 12 | 0 | 17 | 34 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 5 | 5 | 6 | 8 | 0 | 14 | 24 |
| Total | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 33 | 3 | 0 | 24 | 27 | 27 | 37 | 0 | 64 | 124 |
| Grand Total | 0 | 0 | 1 | 1 | 0 | 81 | 2 | 83 | 5 | 0 | 52 | 57 | 55 | 97 | 0 | 152 | 293 |
| Apprch % | 0 | 0 | 100 | | 0 | 97.6 | 2.4 | | 8.8 | 0 | 91.2 | | 36.2 | 63.8 | 0 | | |
| Total % | 0 | 0 | 0.3 | 0.3 | 0 | 27.6 | 0.7 | 28.3 | 1.7 | 0 | 17.7 | 19.5 | 18.8 | 33.1 | 0 | 51.9 | |

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95th St & Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no ped

Site Code : 00000000

Start Date : 4/26/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 15 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 5 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 19 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 13 | 34 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 61.8 | 0 | 61.8 | 0 | 0 | 0 | | 0 | 38.2 | 0 | 38.2 | |

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95th & Michigan
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM peds
Site Code : 00000000
Start Date : 4/26/2012
Page No : 4

Groups Printed- Bikes & Peds

| | Michigan Ave Crossing North Leg | | | 95th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 95th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|------------------------------|------|------------|------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 14 | 14 | 0 | 1 | 1 | 1 | 5 | 6 | 0 | 0 | 0 | 21 |
| 07:15 AM | 0 | 17 | 17 | 0 | 5 | 5 | 0 | 4 | 4 | 0 | 0 | 0 | 26 |
| 07:30 AM | 0 | 21 | 21 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| 07:45 AM | 0 | 8 | 8 | 0 | 5 | 5 | 0 | 2 | 2 | 0 | 0 | 0 | 15 |
| Total | 0 | 60 | 60 | 0 | 13 | 13 | 1 | 11 | 12 | 0 | 0 | 0 | 85 |
| 08:00 AM | 0 | 12 | 12 | 0 | 3 | 3 | 0 | 13 | 13 | 0 | 0 | 0 | 28 |
| 08:15 AM | 0 | 8 | 8 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 08:30 AM | 0 | 11 | 11 | 0 | 7 | 7 | 0 | 1 | 1 | 0 | 0 | 0 | 19 |
| 08:45 AM | 0 | 9 | 9 | 0 | 3 | 3 | 0 | 7 | 7 | 0 | 0 | 0 | 19 |
| Total | 0 | 40 | 40 | 0 | 15 | 15 | 0 | 21 | 21 | 0 | 0 | 0 | 76 |
| Grand Total | 0 | 100 | 100 | 0 | 28 | 28 | 1 | 32 | 33 | 0 | 0 | 0 | 161 |
| Apprch % | 0 | 100 | | 0 | 100 | | 3 | 97 | | 0 | 0 | | |
| Total % | 0 | 62.1 | 62.1 | 0 | 17.4 | 17.4 | 0.6 | 19.9 | 20.5 | 0 | 0 | 0 | |

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95th St & Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : PM no ped
Site Code : 00000000
Start Date : 4/26/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 1 | 1 | 0 | 193 | 22 | 215 | 20 | 0 | 28 | 48 | 34 | 214 | 0 | 248 | 512 |
| 04:15 PM | 1 | 5 | 2 | 8 | 0 | 153 | 18 | 171 | 20 | 0 | 24 | 44 | 30 | 199 | 0 | 229 | 452 |
| 04:30 PM | 2 | 6 | 2 | 10 | 0 | 153 | 16 | 169 | 19 | 0 | 15 | 34 | 42 | 188 | 0 | 230 | 443 |
| 04:45 PM | 0 | 5 | 3 | 8 | 0 | 193 | 19 | 212 | 12 | 0 | 16 | 28 | 32 | 214 | 0 | 246 | 494 |
| Total | 3 | 16 | 8 | 27 | 0 | 692 | 75 | 767 | 71 | 0 | 83 | 154 | 138 | 815 | 0 | 953 | 1901 |
| 05:00 PM | 3 | 0 | 3 | 6 | 0 | 193 | 21 | 214 | 16 | 0 | 20 | 36 | 55 | 182 | 0 | 237 | 493 |
| 05:15 PM | 0 | 7 | 1 | 8 | 0 | 196 | 23 | 219 | 23 | 0 | 13 | 36 | 35 | 197 | 0 | 232 | 495 |
| 05:30 PM | 2 | 4 | 3 | 9 | 0 | 172 | 19 | 191 | 18 | 0 | 26 | 44 | 32 | 248 | 0 | 280 | 524 |
| 05:45 PM | 2 | 3 | 2 | 7 | 0 | 163 | 27 | 190 | 22 | 0 | 15 | 37 | 38 | 232 | 0 | 270 | 504 |
| Total | 7 | 14 | 9 | 30 | 0 | 724 | 90 | 814 | 79 | 0 | 74 | 153 | 160 | 859 | 0 | 1019 | 2016 |
| Grand Total | 10 | 30 | 17 | 57 | 0 | 1416 | 165 | 1581 | 150 | 0 | 157 | 307 | 298 | 1674 | 0 | 1972 | 3917 |
| Apprch % | 17.5 | 52.6 | 29.8 | | 0 | 89.6 | 10.4 | | 48.9 | 0 | 51.1 | | 15.1 | 84.9 | 0 | | |
| Total % | 0.3 | 0.8 | 0.4 | 1.5 | 0 | 36.2 | 4.2 | 40.4 | 3.8 | 0 | 4 | 7.8 | 7.6 | 42.7 | 0 | 50.3 | |
| PC | 10 | 30 | 16 | 56 | 0 | 1339 | 165 | 1504 | 148 | 0 | 121 | 269 | 261 | 1627 | 0 | 1888 | 3717 |
| % PC | 100 | 100 | 94.1 | 98.2 | 0 | 94.6 | 100 | 95.1 | 98.7 | 0 | 77.1 | 87.6 | 87.6 | 97.2 | 0 | 95.7 | 94.9 |
| SU | 0 | 0 | 1 | 1 | 0 | 72 | 0 | 72 | 1 | 0 | 36 | 37 | 37 | 41 | 0 | 78 | 188 |
| % SU | 0 | 0 | 5.9 | 1.8 | 0 | 5.1 | 0 | 4.6 | 0.7 | 0 | 22.9 | 12.1 | 12.4 | 2.4 | 0 | 4 | 4.8 |
| MU | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 6 | 12 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0.3 | 0.7 | 0 | 0 | 0.3 | 0 | 0.4 | 0 | 0.3 | 0.3 |

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|--|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 3 | 0 | 3 | 6 | 0 | 193 | 21 | 214 | 16 | 0 | 20 | 36 | 55 | 182 | 0 | 237 | 493 |
| 05:15 PM | 0 | 7 | 1 | 8 | 0 | 196 | 23 | 219 | 23 | 0 | 13 | 36 | 35 | 197 | 0 | 232 | 495 |
| 05:30 PM | 2 | 4 | 3 | 9 | 0 | 172 | 19 | 191 | 18 | 0 | 26 | 44 | 32 | 248 | 0 | 280 | 524 |
| 05:45 PM | 2 | 3 | 2 | 7 | 0 | 163 | 27 | 190 | 22 | 0 | 15 | 37 | 38 | 232 | 0 | 270 | 504 |
| Total Volume | 7 | 14 | 9 | 30 | 0 | 724 | 90 | 814 | 79 | 0 | 74 | 153 | 160 | 859 | 0 | 1019 | 2016 |
| % App. Total | 23.3 | 46.7 | 30 | | 0 | 88.9 | 11.1 | | 51.6 | 0 | 48.4 | | 15.7 | 84.3 | 0 | | |
| PHF | .583 | .500 | .750 | .833 | .000 | .923 | .833 | .929 | .859 | .000 | .712 | .869 | .727 | .866 | .000 | .910 | .962 |

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95th St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no ped

Site Code : 00000000

Start Date : 4/26/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 13 | 0 | 0 | 5 | 5 | 5 | 7 | 0 | 12 | 30 |
| 04:15 PM | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 9 | 0 | 0 | 6 | 6 | 5 | 5 | 0 | 10 | 26 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 4 | 6 | 0 | 10 | 22 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 6 | 6 | 6 | 4 | 0 | 10 | 26 |
| Total | 0 | 0 | 1 | 1 | 0 | 39 | 0 | 39 | 0 | 0 | 22 | 22 | 20 | 22 | 0 | 42 | 104 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 4 | 4 | 5 | 6 | 0 | 11 | 22 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 1 | 0 | 2 | 3 | 4 | 3 | 0 | 7 | 17 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 6 | 6 | 4 | 6 | 0 | 10 | 25 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 2 | 2 | 4 | 4 | 0 | 8 | 20 |
| Total | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 33 | 1 | 0 | 14 | 15 | 17 | 19 | 0 | 36 | 84 |
| Grand Total | 0 | 0 | 1 | 1 | 0 | 72 | 0 | 72 | 1 | 0 | 36 | 37 | 37 | 41 | 0 | 78 | 188 |
| Apprch % | 0 | 0 | 100 | | 0 | 100 | 0 | | 2.7 | 0 | 97.3 | | 47.4 | 52.6 | 0 | | |
| Total % | 0 | 0 | 0.5 | 0.5 | 0 | 38.3 | 0 | 38.3 | 0.5 | 0 | 19.1 | 19.7 | 19.7 | 21.8 | 0 | 41.5 | |

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95th St & Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no ped

Site Code : 00000000

Start Date : 4/26/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 95th St From East | | | | Michigan Ave From South | | | | 95th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 10 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 6 | 12 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 100 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 41.7 | 0 | 41.7 | 8.3 | 0 | 0 | 8.3 | 0 | 50 | 0 | 50 | |

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Michigan Ave & 95th St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : PM Peds
Site Code : 00000000
Start Date : 4/26/2012
Page No : 8

Groups Printed- Bikes & Peds

| | Michigan Ave Crossing North Leg | | | 95th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 95th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|------------------------------|------|------------|------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 9 | 9 | 0 | 3 | 3 | 0 | 8 | 8 | 0 | 5 | 5 | 25 |
| 04:15 PM | 0 | 19 | 19 | 0 | 1 | 1 | 0 | 6 | 6 | 0 | 8 | 8 | 34 |
| 04:30 PM | 0 | 16 | 16 | 0 | 1 | 1 | 0 | 4 | 4 | 0 | 9 | 9 | 30 |
| 04:45 PM | 0 | 16 | 16 | 0 | 3 | 3 | 0 | 4 | 4 | 0 | 8 | 8 | 31 |
| Total | 0 | 60 | 60 | 0 | 8 | 8 | 0 | 22 | 22 | 0 | 30 | 30 | 120 |
| 05:00 PM | 0 | 26 | 26 | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 13 | 13 | 47 |
| 05:15 PM | 0 | 16 | 16 | 0 | 3 | 3 | 1 | 3 | 4 | 0 | 1 | 1 | 24 |
| 05:30 PM | 0 | 18 | 18 | 0 | 5 | 5 | 0 | 4 | 4 | 0 | 16 | 16 | 43 |
| 05:45 PM | 0 | 7 | 7 | 0 | 2 | 2 | 0 | 6 | 6 | 0 | 8 | 8 | 23 |
| Total | 0 | 67 | 67 | 0 | 12 | 12 | 1 | 19 | 20 | 0 | 38 | 38 | 137 |
| Grand Total | 0 | 127 | 127 | 0 | 20 | 20 | 1 | 41 | 42 | 0 | 68 | 68 | 257 |
| Apprch % | 0 | 100 | | 0 | 100 | | 2.4 | 97.6 | | 0 | 100 | | |
| Total % | 0 | 49.4 | 49.4 | 0 | 7.8 | 7.8 | 0.4 | 16 | 16.3 | 0 | 26.5 | 26.5 | |

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95TH ST & WENTWORTH AVE

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 1

Groups Printed- PC - SU - MU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 8 | 2 | 2 | 12 | 2 | 127 | 7 | 136 | 13 | 10 | 6 | 29 | 0 | 149 | 4 | 153 | 330 |
| 07:15 AM | 14 | 2 | 4 | 20 | 1 | 140 | 3 | 144 | 20 | 13 | 12 | 45 | 1 | 148 | 5 | 154 | 363 |
| 07:30 AM | 22 | 6 | 9 | 37 | 11 | 174 | 4 | 189 | 23 | 17 | 12 | 52 | 1 | 175 | 16 | 192 | 470 |
| 07:45 AM | 26 | 8 | 12 | 46 | 12 | 188 | 5 | 205 | 25 | 18 | 17 | 60 | 2 | 201 | 9 | 212 | 523 |
| Total | 70 | 18 | 27 | 115 | 26 | 629 | 19 | 674 | 81 | 58 | 47 | 186 | 4 | 673 | 34 | 711 | 1686 |
| 08:00 AM | 27 | 6 | 10 | 43 | 11 | 193 | 6 | 210 | 14 | 15 | 8 | 37 | 5 | 221 | 5 | 231 | 521 |
| 08:15 AM | 18 | 9 | 7 | 34 | 9 | 152 | 6 | 167 | 13 | 10 | 6 | 29 | 8 | 168 | 6 | 182 | 412 |
| 08:30 AM | 23 | 3 | 5 | 31 | 9 | 163 | 3 | 175 | 23 | 7 | 11 | 41 | 4 | 194 | 14 | 212 | 459 |
| 08:45 AM | 16 | 5 | 5 | 26 | 11 | 180 | 9 | 200 | 12 | 11 | 14 | 37 | 8 | 195 | 13 | 216 | 479 |
| Total | 84 | 23 | 27 | 134 | 40 | 688 | 24 | 752 | 62 | 43 | 39 | 144 | 25 | 778 | 38 | 841 | 1871 |
| Grand Total | 154 | 41 | 54 | 249 | 66 | 1317 | 43 | 1426 | 143 | 101 | 86 | 330 | 29 | 1451 | 72 | 1552 | 3557 |
| Apprch % | 61.8 | 16.5 | 21.7 | | 4.6 | 92.4 | 3 | | 43.3 | 30.6 | 26.1 | | 1.9 | 93.5 | 4.6 | | |
| Total % | 4.3 | 1.2 | 1.5 | 7 | 1.9 | 37 | 1.2 | 40.1 | 4 | 2.8 | 2.4 | 9.3 | 0.8 | 40.8 | 2 | 43.6 | |
| PC | 148 | 38 | 49 | 235 | 65 | 1205 | 43 | 1313 | 139 | 88 | 84 | 311 | 29 | 1340 | 66 | 1435 | 3294 |
| % PC | 96.1 | 92.7 | 90.7 | 94.4 | 98.5 | 91.5 | 100 | 92.1 | 97.2 | 87.1 | 97.7 | 94.2 | 100 | 92.4 | 91.7 | 92.5 | 92.6 |
| SU | 6 | 3 | 5 | 14 | 1 | 94 | 0 | 95 | 4 | 13 | 2 | 19 | 0 | 97 | 6 | 103 | 231 |
| % SU | 3.9 | 7.3 | 9.3 | 5.6 | 1.5 | 7.1 | 0 | 6.7 | 2.8 | 12.9 | 2.3 | 5.8 | 0 | 6.7 | 8.3 | 6.6 | 6.5 |
| MU | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 32 |
| % MU | 0 | 0 | 0 | 0 | 0 | 1.4 | 0 | 1.3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.9 | 0.9 |

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|--|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 22 | 6 | 9 | 37 | 11 | 174 | 4 | 189 | 23 | 17 | 12 | 52 | 1 | 175 | 16 | 192 | 470 |
| 07:45 AM | 26 | 8 | 12 | 46 | 12 | 188 | 5 | 205 | 25 | 18 | 17 | 60 | 2 | 201 | 9 | 212 | 523 |
| 08:00 AM | 27 | 6 | 10 | 43 | 11 | 193 | 6 | 210 | 14 | 15 | 8 | 37 | 5 | 221 | 5 | 231 | 521 |
| 08:15 AM | 18 | 9 | 7 | 34 | 9 | 152 | 6 | 167 | 13 | 10 | 6 | 29 | 8 | 168 | 6 | 182 | 412 |
| Total Volume | 93 | 29 | 38 | 160 | 43 | 707 | 21 | 771 | 75 | 60 | 43 | 178 | 16 | 765 | 36 | 817 | 1926 |
| % App. Total | 58.1 | 18.1 | 23.8 | | 5.6 | 91.7 | 2.7 | | 42.1 | 33.7 | 24.2 | | 2 | 93.6 | 4.4 | | |
| PHF | .861 | .806 | .792 | .870 | .896 | .916 | .875 | .918 | .750 | .833 | .632 | .742 | .500 | .865 | .563 | .884 | .921 |

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95TH ST & WENTWORTH AVE

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 2

Groups Printed- SU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 1 | 3 | 0 | 4 | 0 | 10 | 0 | 10 | 23 |
| 07:15 AM | 1 | 0 | 1 | 2 | 0 | 15 | 0 | 15 | 0 | 3 | 0 | 3 | 0 | 11 | 0 | 11 | 31 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 1 | 0 | 0 | 1 | 0 | 18 | 2 | 20 | 35 |
| 07:45 AM | 0 | 1 | 1 | 2 | 0 | 7 | 0 | 7 | 1 | 1 | 0 | 2 | 0 | 9 | 2 | 11 | 22 |
| Total | 1 | 1 | 2 | 4 | 0 | 45 | 0 | 45 | 3 | 7 | 0 | 10 | 0 | 48 | 4 | 52 | 111 |
| 08:00 AM | 3 | 1 | 0 | 4 | 1 | 12 | 0 | 13 | 0 | 2 | 1 | 3 | 0 | 13 | 0 | 13 | 33 |
| 08:15 AM | 0 | 0 | 1 | 1 | 0 | 8 | 0 | 8 | 1 | 1 | 0 | 2 | 0 | 7 | 0 | 7 | 18 |
| 08:30 AM | 1 | 0 | 1 | 2 | 0 | 15 | 0 | 15 | 0 | 1 | 1 | 2 | 0 | 15 | 1 | 16 | 35 |
| 08:45 AM | 1 | 1 | 1 | 3 | 0 | 14 | 0 | 14 | 0 | 2 | 0 | 2 | 0 | 14 | 1 | 15 | 34 |
| Total | 5 | 2 | 3 | 10 | 1 | 49 | 0 | 50 | 1 | 6 | 2 | 9 | 0 | 49 | 2 | 51 | 120 |
| Grand Total | 6 | 3 | 5 | 14 | 1 | 94 | 0 | 95 | 4 | 13 | 2 | 19 | 0 | 97 | 6 | 103 | 231 |
| Apprch % | 42.9 | 21.4 | 35.7 | | 1.1 | 98.9 | 0 | | 21.1 | 68.4 | 10.5 | | 0 | 94.2 | 5.8 | | |
| Total % | 2.6 | 1.3 | 2.2 | 6.1 | 0.4 | 40.7 | 0 | 41.1 | 1.7 | 5.6 | 0.9 | 8.2 | 0 | 42 | 2.6 | 44.6 | |

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95TH ST & WENTWORTH AVE

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 3

Groups Printed- MU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 9 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 6 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 9 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 |
| Total | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 23 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 | 32 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 56.2 | 0 | 56.2 | 0 | 0 | 0 | | 0 | 43.8 | 0 | 43.8 | |

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95TH AND WENTWORTH AVE

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 4

Groups Printed- Peds & Bikes

| | WENTWORTH AVE Crossing North Leg | | | 95TH ST Crossing East Leg | | | WENTWORTH AVE Crossing South Leg | | | 95TH ST Crossing West Leg | | | Int. Total |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 07:15 AM | 0 | 10 | 10 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 11 |
| 07:30 AM | 0 | 7 | 7 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 9 |
| 07:45 AM | 0 | 13 | 13 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 1 | 18 |
| Total | 0 | 36 | 36 | 0 | 0 | 0 | 1 | 6 | 7 | 0 | 1 | 1 | 44 |
| 08:00 AM | 0 | 23 | 23 | 0 | 3 | 3 | 0 | 4 | 4 | 0 | 2 | 2 | 32 |
| 08:15 AM | 1 | 18 | 19 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 23 |
| 08:30 AM | 0 | 16 | 16 | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 22 |
| 08:45 AM | 0 | 9 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Total | 1 | 66 | 67 | 0 | 10 | 10 | 0 | 7 | 7 | 0 | 3 | 3 | 87 |
| Grand Total | 1 | 102 | 103 | 0 | 10 | 10 | 1 | 13 | 14 | 0 | 4 | 4 | 131 |
| Apprch % | 1 | 99 | | 0 | 100 | | 7.1 | 92.9 | | 0 | 100 | | |
| Total % | 0.8 | 77.9 | 78.6 | 0 | 7.6 | 7.6 | 0.8 | 9.9 | 10.7 | 0 | 3.1 | 3.1 | |

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95TH ST AND WENTWORTH AVE

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 5

Groups Printed- PC - SU - MU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 17 | 10 | 8 | 35 | 7 | 207 | 9 | 223 | 15 | 9 | 10 | 34 | 9 | 190 | 3 | 202 | 494 |
| 04:15 PM | 19 | 11 | 4 | 34 | 9 | 213 | 2 | 224 | 12 | 9 | 6 | 27 | 5 | 168 | 6 | 179 | 464 |
| 04:30 PM | 17 | 10 | 2 | 29 | 7 | 187 | 7 | 201 | 14 | 8 | 8 | 30 | 10 | 169 | 12 | 191 | 451 |
| 04:45 PM | 16 | 13 | 6 | 35 | 6 | 192 | 10 | 208 | 8 | 7 | 8 | 23 | 12 | 175 | 10 | 197 | 463 |
| Total | 69 | 44 | 20 | 133 | 29 | 799 | 28 | 856 | 49 | 33 | 32 | 114 | 36 | 702 | 31 | 769 | 1872 |
| 05:00 PM | 21 | 5 | 7 | 33 | 13 | 218 | 10 | 241 | 17 | 6 | 11 | 34 | 9 | 168 | 12 | 189 | 497 |
| 05:15 PM | 19 | 8 | 6 | 33 | 14 | 241 | 8 | 263 | 5 | 5 | 6 | 16 | 2 | 118 | 7 | 127 | 439 |
| 05:30 PM | 21 | 5 | 4 | 30 | 21 | 215 | 9 | 245 | 14 | 4 | 10 | 28 | 9 | 177 | 11 | 197 | 500 |
| 05:45 PM | 24 | 4 | 6 | 34 | 6 | 265 | 6 | 277 | 12 | 2 | 7 | 21 | 7 | 135 | 9 | 151 | 483 |
| Total | 85 | 22 | 23 | 130 | 54 | 939 | 33 | 1026 | 48 | 17 | 34 | 99 | 27 | 598 | 39 | 664 | 1919 |
| 06:00 PM | 20 | 3 | 3 | 26 | 5 | 238 | 5 | 248 | 8 | 1 | 8 | 17 | 5 | 113 | 6 | 124 | 415 |
| Grand Total | 174 | 69 | 46 | 289 | 88 | 1976 | 66 | 2130 | 105 | 51 | 74 | 230 | 68 | 1413 | 76 | 1557 | 4206 |
| Apprch % | 60.2 | 23.9 | 15.9 | | 4.1 | 92.8 | 3.1 | | 45.7 | 22.2 | 32.2 | | 4.4 | 90.8 | 4.9 | | |
| Total % | 4.1 | 1.6 | 1.1 | 6.9 | 2.1 | 47 | 1.6 | 50.6 | 2.5 | 1.2 | 1.8 | 5.5 | 1.6 | 33.6 | 1.8 | 37 | |
| PC | 174 | 68 | 45 | 287 | 87 | 1875 | 64 | 2026 | 103 | 50 | 74 | 227 | 67 | 1342 | 75 | 1484 | 4024 |
| % PC | 100 | 98.6 | 97.8 | 99.3 | 98.9 | 94.9 | 97 | 95.1 | 98.1 | 98 | 100 | 98.7 | 98.5 | 95 | 98.7 | 95.3 | 95.7 |
| SU | 0 | 1 | 1 | 2 | 1 | 84 | 2 | 87 | 2 | 1 | 0 | 3 | 1 | 67 | 1 | 69 | 161 |
| % SU | 0 | 1.4 | 2.2 | 0.7 | 1.1 | 4.3 | 3 | 4.1 | 1.9 | 2 | 0 | 1.3 | 1.5 | 4.7 | 1.3 | 4.4 | 3.8 |
| MU | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 21 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.3 | 0.5 |

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|--|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 21 | 5 | 7 | 33 | 13 | 218 | 10 | 241 | 17 | 6 | 11 | 34 | 9 | 168 | 12 | 189 | 497 |
| 05:15 PM | 19 | 8 | 6 | 33 | 14 | 241 | 8 | 263 | 5 | 5 | 6 | 16 | 2 | 118 | 7 | 127 | 439 |
| 05:30 PM | 21 | 5 | 4 | 30 | 21 | 215 | 9 | 245 | 14 | 4 | 10 | 28 | 9 | 177 | 11 | 197 | 500 |
| 05:45 PM | 24 | 4 | 6 | 34 | 6 | 265 | 6 | 277 | 12 | 2 | 7 | 21 | 7 | 135 | 9 | 151 | 483 |
| Total Volume | 85 | 22 | 23 | 130 | 54 | 939 | 33 | 1026 | 48 | 17 | 34 | 99 | 27 | 598 | 39 | 664 | 1919 |
| % App. Total | 65.4 | 16.9 | 17.7 | | 5.3 | 91.5 | 3.2 | | 48.5 | 17.2 | 34.3 | | 4.1 | 90.1 | 5.9 | | |
| PHF | .885 | .688 | .821 | .956 | .643 | .886 | .825 | .926 | .706 | .708 | .773 | .728 | .750 | .845 | .813 | .843 | .960 |

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95TH ST AND WENTWORTH AVE

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 6

Groups Printed- SU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 12 | 1 | 13 | 1 | 0 | 0 | 1 | 0 | 8 | 0 | 8 | 23 |
| 04:15 PM | 0 | 0 | 1 | 1 | 0 | 16 | 0 | 16 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 7 | 25 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 11 | 1 | 0 | 0 | 1 | 1 | 12 | 0 | 13 | 25 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 15 |
| Total | 0 | 1 | 1 | 2 | 0 | 44 | 2 | 46 | 2 | 1 | 0 | 3 | 1 | 35 | 1 | 37 | 88 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 17 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 15 |
| 05:30 PM | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 19 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 13 |
| Total | 0 | 0 | 0 | 0 | 1 | 35 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 28 | 64 |
| 06:00 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 9 |
| Grand Total | 0 | 1 | 1 | 2 | 1 | 84 | 2 | 87 | 2 | 1 | 0 | 3 | 1 | 67 | 1 | 69 | 161 |
| Apprch % | 0 | 50 | 50 | | 1.1 | 96.6 | 2.3 | | 66.7 | 33.3 | 0 | | 1.4 | 97.1 | 1.4 | | |
| Total % | 0 | 0.6 | 0.6 | 1.2 | 0.6 | 52.2 | 1.2 | 54 | 1.2 | 0.6 | 0 | 1.9 | 0.6 | 41.6 | 0.6 | 42.9 | |

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95TH ST AND WENTWORTH AVE

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 7

Groups Printed- MU

| | WENTWORTH AVE From North | | | | 95TH ST From East | | | | WENTWORTH AVE From South | | | | 95TH ST From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 12 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 |
| 06:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 21 |
| Apprch % | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 19 | |

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95TH ST AND WENTWORTH AVE

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM peds

Site Code : 00000000

Start Date : 4/25/2012

Page No : 8

Groups Printed- Peds & Bikes

| | WENTWORTH AVE Crossing North Leg | | | 95TH ST Crossing East Leg | | | WENTWORTH AVE Crossing South Leg | | | 95TH ST Crossing West Leg | | | Int. Total |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 1 | 12 | 13 | 0 | 4 | 4 | 0 | 3 | 3 | 0 | 0 | 0 | 20 |
| 04:15 PM | 0 | 12 | 12 | 0 | 8 | 8 | 0 | 13 | 13 | 0 | 0 | 0 | 33 |
| 04:30 PM | 1 | 21 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 24 |
| 04:45 PM | 0 | 28 | 28 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 31 |
| Total | 2 | 73 | 75 | 0 | 12 | 12 | 0 | 17 | 17 | 0 | 4 | 4 | 108 |
| 05:00 PM | 2 | 31 | 33 | 1 | 6 | 7 | 0 | 7 | 7 | 0 | 3 | 3 | 50 |
| 05:15 PM | 1 | 50 | 51 | 0 | 9 | 9 | 0 | 7 | 7 | 0 | 8 | 8 | 75 |
| 05:30 PM | 1 | 28 | 29 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 34 |
| 05:45 PM | 1 | 36 | 37 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 3 | 3 | 45 |
| Total | 5 | 145 | 150 | 2 | 19 | 21 | 0 | 16 | 16 | 0 | 17 | 17 | 204 |
| 06:00 PM | 1 | 28 | 29 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 2 | 2 | 34 |
| Grand Total | 8 | 246 | 254 | 3 | 32 | 35 | 0 | 34 | 34 | 0 | 23 | 23 | 346 |
| Apprch % | 3.1 | 96.9 | | 8.6 | 91.4 | | 0 | 100 | | 0 | 100 | | |
| Total % | 2.3 | 71.1 | 73.4 | 0.9 | 9.2 | 10.1 | 0 | 9.8 | 9.8 | 0 | 6.6 | 6.6 | |

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98TH PL AND HALSTED ST

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : am no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 1

Groups Printed- PC - SU - MU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 97 | 37 | 0 | 134 | 189 | 7 | 56 | 252 | 0 | 143 | 28 | 171 | 0 | 0 | 0 | 0 | 557 |
| 07:15 AM | 133 | 56 | 0 | 189 | 206 | 7 | 42 | 255 | 0 | 183 | 43 | 226 | 0 | 0 | 0 | 0 | 670 |
| 07:30 AM | 154 | 67 | 0 | 221 | 278 | 16 | 61 | 355 | 0 | 192 | 53 | 245 | 0 | 0 | 0 | 0 | 821 |
| 07:45 AM | 196 | 89 | 0 | 285 | 252 | 9 | 45 | 306 | 0 | 203 | 46 | 249 | 0 | 0 | 0 | 0 | 840 |
| Total | 580 | 249 | 0 | 829 | 925 | 39 | 204 | 1168 | 0 | 721 | 170 | 891 | 0 | 0 | 0 | 0 | 2888 |
| 08:00 AM | 145 | 78 | 0 | 223 | 277 | 8 | 81 | 366 | 0 | 216 | 36 | 252 | 0 | 0 | 0 | 0 | 841 |
| 08:15 AM | 183 | 65 | 0 | 248 | 225 | 6 | 51 | 282 | 0 | 203 | 46 | 249 | 0 | 0 | 0 | 0 | 779 |
| 08:30 AM | 160 | 52 | 0 | 212 | 212 | 6 | 53 | 271 | 0 | 221 | 28 | 249 | 0 | 0 | 0 | 0 | 732 |
| 08:45 AM | 131 | 82 | 0 | 213 | 217 | 7 | 59 | 283 | 0 | 164 | 40 | 204 | 0 | 0 | 0 | 0 | 700 |
| Total | 619 | 277 | 0 | 896 | 931 | 27 | 244 | 1202 | 0 | 804 | 150 | 954 | 0 | 0 | 0 | 0 | 3052 |
| Grand Total | 1199 | 526 | 0 | 1725 | 1856 | 66 | 448 | 2370 | 0 | 1525 | 320 | 1845 | 0 | 0 | 0 | 0 | 5940 |
| Apprch % | 69.5 | 30.5 | 0 | | 78.3 | 2.8 | 18.9 | | 0 | 82.7 | 17.3 | | 0 | 0 | 0 | | |
| Total % | 20.2 | 8.9 | 0 | 29 | 31.2 | 1.1 | 7.5 | 39.9 | 0 | 25.7 | 5.4 | 31.1 | 0 | 0 | 0 | 0 | |
| PC | 1101 | 505 | 0 | 1606 | 1814 | 62 | 429 | 2305 | 0 | 1437 | 306 | 1743 | 0 | 0 | 0 | 0 | 5654 |
| % PC | 91.8 | 96 | 0 | 93.1 | 97.7 | 93.9 | 95.8 | 97.3 | 0 | 94.2 | 95.6 | 94.5 | 0 | 0 | 0 | 0 | 95.2 |
| SU | 78 | 14 | 0 | 92 | 26 | 3 | 19 | 48 | 0 | 76 | 13 | 89 | 0 | 0 | 0 | 0 | 229 |
| % SU | 6.5 | 2.7 | 0 | 5.3 | 1.4 | 4.5 | 4.2 | 2 | 0 | 5 | 4.1 | 4.8 | 0 | 0 | 0 | 0 | 3.9 |
| MU | 20 | 7 | 0 | 27 | 16 | 1 | 0 | 17 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 57 |
| % MU | 1.7 | 1.3 | 0 | 1.6 | 0.9 | 1.5 | 0 | 0.7 | 0 | 0.8 | 0.3 | 0.7 | 0 | 0 | 0 | 0 | 1 |

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|--|--------------------------|-----------|------|------------|----------------------|-----------|-----------|------------|--------------------------|------------|-----------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 154 | 67 | 0 | 221 | 278 | 16 | 61 | 355 | 0 | 192 | 53 | 245 | 0 | 0 | 0 | 0 | 821 |
| 07:45 AM | 196 | 89 | 0 | 285 | 252 | 9 | 45 | 306 | 0 | 203 | 46 | 249 | 0 | 0 | 0 | 0 | 840 |
| 08:00 AM | 145 | 78 | 0 | 223 | 277 | 8 | 81 | 366 | 0 | 216 | 36 | 252 | 0 | 0 | 0 | 0 | 841 |
| 08:15 AM | 183 | 65 | 0 | 248 | 225 | 6 | 51 | 282 | 0 | 203 | 46 | 249 | 0 | 0 | 0 | 0 | 779 |
| Total Volume | 678 | 299 | 0 | 977 | 1032 | 39 | 238 | 1309 | 0 | 814 | 181 | 995 | 0 | 0 | 0 | 0 | 3281 |
| % App. Total | 69.4 | 30.6 | 0 | | 78.8 | 3 | 18.2 | | 0 | 81.8 | 18.2 | | 0 | 0 | 0 | | |
| PHF | .865 | .840 | .000 | .857 | .928 | .609 | .735 | .894 | .000 | .942 | .854 | .987 | .000 | .000 | .000 | .000 | .975 |

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98TH PL AND HALSTED ST

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : am no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 2

Groups Printed- SU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 14 | 1 | 0 | 15 | 2 | 0 | 2 | 4 | 0 | 15 | 2 | 17 | 0 | 0 | 0 | 0 | 36 |
| 07:15 AM | 6 | 0 | 0 | 6 | 3 | 1 | 2 | 6 | 0 | 11 | 3 | 14 | 0 | 0 | 0 | 0 | 26 |
| 07:30 AM | 11 | 1 | 0 | 12 | 7 | 1 | 1 | 9 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 31 |
| 07:45 AM | 11 | 3 | 0 | 14 | 2 | 0 | 2 | 4 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 25 |
| Total | 42 | 5 | 0 | 47 | 14 | 2 | 7 | 23 | 0 | 42 | 6 | 48 | 0 | 0 | 0 | 0 | 118 |
| 08:00 AM | 8 | 0 | 0 | 8 | 2 | 0 | 5 | 7 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 25 |
| 08:15 AM | 14 | 3 | 0 | 17 | 3 | 0 | 0 | 3 | 0 | 9 | 4 | 13 | 0 | 0 | 0 | 0 | 33 |
| 08:30 AM | 8 | 2 | 0 | 10 | 5 | 0 | 3 | 8 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 29 |
| 08:45 AM | 6 | 4 | 0 | 10 | 2 | 1 | 4 | 7 | 0 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 24 |
| Total | 36 | 9 | 0 | 45 | 12 | 1 | 12 | 25 | 0 | 34 | 7 | 41 | 0 | 0 | 0 | 0 | 111 |
| Grand Total | 78 | 14 | 0 | 92 | 26 | 3 | 19 | 48 | 0 | 76 | 13 | 89 | 0 | 0 | 0 | 0 | 229 |
| Apprch % | 84.8 | 15.2 | 0 | | 54.2 | 6.2 | 39.6 | | 0 | 85.4 | 14.6 | | 0 | 0 | 0 | | |
| Total % | 34.1 | 6.1 | 0 | 40.2 | 11.4 | 1.3 | 8.3 | 21 | 0 | 33.2 | 5.7 | 38.9 | 0 | 0 | 0 | 0 | |

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98TH PL AND HALSTED ST

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : am no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 3

Groups Printed- MU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 3 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 10 |
| 07:30 AM | 0 | 4 | 0 | 4 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| 07:45 AM | 3 | 1 | 0 | 4 | 3 | 1 | 0 | 4 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 10 |
| Total | 7 | 5 | 0 | 12 | 10 | 1 | 0 | 11 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 30 |
| 08:00 AM | 3 | 1 | 0 | 4 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 8 |
| 08:15 AM | 2 | 1 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:30 AM | 3 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 8 |
| 08:45 AM | 5 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| Total | 13 | 2 | 0 | 15 | 6 | 0 | 0 | 6 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 27 |
| Grand Total | 20 | 7 | 0 | 27 | 16 | 1 | 0 | 17 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 57 |
| Apprch % | 74.1 | 25.9 | 0 | | 94.1 | 5.9 | 0 | | 0 | 92.3 | 7.7 | | 0 | 0 | 0 | | |
| Total % | 35.1 | 12.3 | 0 | 47.4 | 28.1 | 1.8 | 0 | 29.8 | 0 | 21.1 | 1.8 | 22.8 | 0 | 0 | 0 | 0 | |

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98TH PL AND HALSTED ST

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM Peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 4

Groups Printed- Peds & Bikes

| | HALSTED ST Crossing North Leg | | | 98TH PL Crossing East Leg | | | HALSTED ST Crossing South Leg | | | 98TH PL Crossing West Leg | | | Int. Total |
|-------------|----------------------------------|------|------------|------------------------------|------|------------|----------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:15 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 4 |
| 07:45 AM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 8 |
| Total | 0 | 1 | 1 | 0 | 9 | 9 | 0 | 0 | 0 | 0 | 10 | 10 | 20 |
| 08:00 AM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 5 | 6 |
| 08:30 AM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| 08:45 AM | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 5 | 5 | 10 |
| Total | 0 | 9 | 9 | 0 | 6 | 6 | 0 | 0 | 0 | 1 | 10 | 11 | 26 |
| Grand Total | 0 | 10 | 10 | 0 | 15 | 15 | 0 | 0 | 0 | 1 | 20 | 21 | 46 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 0 | | 4.8 | 95.2 | | |
| Total % | 0 | 21.7 | 21.7 | 0 | 32.6 | 32.6 | 0 | 0 | 0 | 2.2 | 43.5 | 45.7 | |

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98TH PL AND HALSTED ST

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 5

Groups Printed- PC - SU - MU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 111 | 193 | 0 | 304 | 226 | 0 | 69 | 295 | 0 | 160 | 53 | 213 | 0 | 0 | 0 | 0 | 812 |
| 04:15 PM | 83 | 162 | 0 | 245 | 307 | 0 | 98 | 405 | 0 | 125 | 55 | 180 | 0 | 0 | 0 | 0 | 830 |
| 04:30 PM | 126 | 175 | 0 | 301 | 213 | 0 | 66 | 279 | 0 | 134 | 42 | 176 | 0 | 0 | 0 | 0 | 756 |
| 04:45 PM | 86 | 213 | 0 | 299 | 289 | 0 | 80 | 369 | 0 | 134 | 33 | 167 | 0 | 0 | 0 | 0 | 835 |
| Total | 406 | 743 | 0 | 1149 | 1035 | 0 | 313 | 1348 | 0 | 553 | 183 | 736 | 0 | 0 | 0 | 0 | 3233 |
| 05:00 PM | 106 | 205 | 0 | 311 | 278 | 0 | 70 | 348 | 0 | 145 | 34 | 179 | 0 | 0 | 0 | 0 | 838 |
| 05:15 PM | 133 | 193 | 0 | 326 | 236 | 0 | 66 | 302 | 0 | 147 | 53 | 200 | 0 | 0 | 0 | 0 | 828 |
| 05:30 PM | 128 | 229 | 0 | 357 | 264 | 0 | 73 | 337 | 0 | 145 | 45 | 190 | 0 | 0 | 0 | 0 | 884 |
| 05:45 PM | 123 | 224 | 0 | 347 | 265 | 0 | 66 | 331 | 0 | 139 | 49 | 188 | 0 | 0 | 0 | 0 | 866 |
| Total | 490 | 851 | 0 | 1341 | 1043 | 0 | 275 | 1318 | 0 | 576 | 181 | 757 | 0 | 0 | 0 | 0 | 3416 |
| Grand Total | 896 | 1594 | 0 | 2490 | 2078 | 0 | 588 | 2666 | 0 | 1129 | 364 | 1493 | 0 | 0 | 0 | 0 | 6649 |
| Apprch % | 36 | 64 | 0 | | 77.9 | 0 | 22.1 | | 0 | 75.6 | 24.4 | | 0 | 0 | 0 | | |
| Total % | 13.5 | 24 | 0 | 37.4 | 31.3 | 0 | 8.8 | 40.1 | 0 | 17 | 5.5 | 22.5 | 0 | 0 | 0 | 0 | |
| PC | 874 | 1514 | 0 | 2388 | 2053 | 0 | 575 | 2628 | 0 | 1070 | 350 | 1420 | 0 | 0 | 0 | 0 | 6436 |
| % PC | 97.5 | 95 | 0 | 95.9 | 98.8 | 0 | 97.8 | 98.6 | 0 | 94.8 | 96.2 | 95.1 | 0 | 0 | 0 | 0 | 96.8 |
| SU | 16 | 63 | 0 | 79 | 10 | 0 | 11 | 21 | 0 | 53 | 9 | 62 | 0 | 0 | 0 | 0 | 162 |
| % SU | 1.8 | 4 | 0 | 3.2 | 0.5 | 0 | 1.9 | 0.8 | 0 | 4.7 | 2.5 | 4.2 | 0 | 0 | 0 | 0 | 2.4 |
| MU | 6 | 17 | 0 | 23 | 15 | 0 | 2 | 17 | 0 | 6 | 5 | 11 | 0 | 0 | 0 | 0 | 51 |
| % MU | 0.7 | 1.1 | 0 | 0.9 | 0.7 | 0 | 0.3 | 0.6 | 0 | 0.5 | 1.4 | 0.7 | 0 | 0 | 0 | 0 | 0.8 |

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|--|--------------------------|------------|------|------------|----------------------|------|-----------|------------|--------------------------|------------|-----------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 106 | 205 | 0 | 311 | 278 | 0 | 70 | 348 | 0 | 145 | 34 | 179 | 0 | 0 | 0 | 0 | 838 |
| 05:15 PM | 133 | 193 | 0 | 326 | 236 | 0 | 66 | 302 | 0 | 147 | 53 | 200 | 0 | 0 | 0 | 0 | 828 |
| 05:30 PM | 128 | 229 | 0 | 357 | 264 | 0 | 73 | 337 | 0 | 145 | 45 | 190 | 0 | 0 | 0 | 0 | 884 |
| 05:45 PM | 123 | 224 | 0 | 347 | 265 | 0 | 66 | 331 | 0 | 139 | 49 | 188 | 0 | 0 | 0 | 0 | 866 |
| Total Volume | 490 | 851 | 0 | 1341 | 1043 | 0 | 275 | 1318 | 0 | 576 | 181 | 757 | 0 | 0 | 0 | 0 | 3416 |
| % App. Total | 36.5 | 63.5 | 0 | | 79.1 | 0 | 20.9 | | 0 | 76.1 | 23.9 | | 0 | 0 | 0 | | |
| PHF | .921 | .929 | .000 | .939 | .938 | .000 | .942 | .947 | .000 | .980 | .854 | .946 | .000 | .000 | .000 | .000 | .966 |

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98TH PL AND HALSTED ST

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 6

Groups Printed- SU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 3 | 9 | 0 | 12 | 3 | 0 | 2 | 5 | 0 | 7 | 2 | 9 | 0 | 0 | 0 | 0 | 26 |
| 04:15 PM | 1 | 8 | 0 | 9 | 3 | 0 | 2 | 5 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 22 |
| 04:30 PM | 3 | 9 | 0 | 12 | 1 | 0 | 0 | 1 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 18 |
| 04:45 PM | 3 | 6 | 0 | 9 | 1 | 0 | 2 | 3 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 20 |
| Total | 10 | 32 | 0 | 42 | 8 | 0 | 6 | 14 | 0 | 26 | 4 | 30 | 0 | 0 | 0 | 0 | 86 |
| 05:00 PM | 1 | 9 | 0 | 10 | 1 | 0 | 0 | 1 | 0 | 8 | 2 | 10 | 0 | 0 | 0 | 0 | 21 |
| 05:15 PM | 3 | 6 | 0 | 9 | 1 | 0 | 1 | 2 | 0 | 9 | 1 | 10 | 0 | 0 | 0 | 0 | 21 |
| 05:30 PM | 2 | 9 | 0 | 11 | 0 | 0 | 1 | 1 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 17 |
| 05:45 PM | 0 | 7 | 0 | 7 | 0 | 0 | 3 | 3 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 17 |
| Total | 6 | 31 | 0 | 37 | 2 | 0 | 5 | 7 | 0 | 27 | 5 | 32 | 0 | 0 | 0 | 0 | 76 |
| Grand Total | 16 | 63 | 0 | 79 | 10 | 0 | 11 | 21 | 0 | 53 | 9 | 62 | 0 | 0 | 0 | 0 | 162 |
| Apprch % | 20.3 | 79.7 | 0 | | 47.6 | 0 | 52.4 | | 0 | 85.5 | 14.5 | | 0 | 0 | 0 | | |
| Total % | 9.9 | 38.9 | 0 | 48.8 | 6.2 | 0 | 6.8 | 13 | 0 | 32.7 | 5.6 | 38.3 | 0 | 0 | 0 | 0 | |

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98TH PL AND HALSTED ST

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM no peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 7

Groups Printed- MU

| | HALSTED ST From North | | | | 98TH PL From East | | | | HALSTED ST From South | | | | 98TH PL From West | | | | |
|-------------|--------------------------|------|------|------------|----------------------|------|------|------------|--------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 2 | 0 | 4 | 5 | 0 | 1 | 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 11 |
| 04:15 PM | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 1 | 3 | 0 | 4 | 7 | 0 | 1 | 8 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 13 |
| 04:45 PM | 1 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 5 | 10 | 0 | 15 | 13 | 0 | 2 | 15 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 33 |
| 05:00 PM | 1 | 2 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 7 |
| 05:15 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 4 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| Total | 1 | 7 | 0 | 8 | 2 | 0 | 0 | 2 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 18 |
| Grand Total | 6 | 17 | 0 | 23 | 15 | 0 | 2 | 17 | 0 | 6 | 5 | 11 | 0 | 0 | 0 | 0 | 51 |
| Apprch % | 26.1 | 73.9 | 0 | | 88.2 | 0 | 11.8 | | 0 | 54.5 | 45.5 | | 0 | 0 | 0 | | |
| Total % | 11.8 | 33.3 | 0 | 45.1 | 29.4 | 0 | 3.9 | 33.3 | 0 | 11.8 | 9.8 | 21.6 | 0 | 0 | 0 | 0 | |

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98TH PL AND HALSTED ST

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : PM Peds

Site Code : 00000000

Start Date : 4/26/2012

Page No : 8

Groups Printed- Peds & Bikes

| | HALSTED ST Crossing North Leg | | | 98TH PL Crossing East Leg | | | HALSTED ST Crossing South Leg | | | 98TH PL Crossing West Leg | | | Int. Total |
|-------------|----------------------------------|------|------------|------------------------------|------|------------|----------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 04:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 4 | 5 |
| 04:30 PM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 |
| 04:45 PM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 1 | 5 | 6 | 10 |
| Total | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 1 | 15 | 16 | 24 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| 05:15 PM | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 9 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 7 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| Total | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 18 | 18 | 23 |
| Grand Total | 0 | 6 | 6 | 0 | 7 | 7 | 0 | 0 | 0 | 1 | 33 | 34 | 47 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 0 | | 2.9 | 97.1 | | |
| Total % | 0 | 12.8 | 12.8 | 0 | 14.9 | 14.9 | 0 | 0 | 0 | 2.1 | 70.2 | 72.3 | |

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98th Pl and Wentworth Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 10 | 0 | 10 | 3 | 2 | 36 | 41 | 0 | 29 | 0 | 29 | 0 | 0 | 0 | 0 | 80 |
| 07:15 AM | 0 | 18 | 0 | 18 | 1 | 0 | 30 | 31 | 0 | 41 | 3 | 44 | 0 | 0 | 0 | 0 | 93 |
| 07:30 AM | 0 | 22 | 0 | 22 | 2 | 1 | 49 | 52 | 0 | 38 | 0 | 38 | 0 | 0 | 0 | 0 | 112 |
| 07:45 AM | 1 | 20 | 0 | 21 | 6 | 0 | 58 | 64 | 0 | 38 | 0 | 38 | 0 | 0 | 0 | 0 | 123 |
| Total | 1 | 70 | 0 | 71 | 12 | 3 | 173 | 188 | 0 | 146 | 3 | 149 | 0 | 0 | 0 | 0 | 408 |
| 08:00 AM | 1 | 32 | 0 | 33 | 8 | 3 | 65 | 76 | 0 | 58 | 3 | 61 | 0 | 0 | 0 | 0 | 170 |
| 08:15 AM | 1 | 29 | 0 | 30 | 5 | 0 | 55 | 60 | 0 | 31 | 0 | 31 | 0 | 0 | 0 | 0 | 121 |
| 08:30 AM | 0 | 24 | 0 | 24 | 4 | 0 | 57 | 61 | 0 | 35 | 0 | 35 | 0 | 0 | 0 | 0 | 120 |
| 08:45 AM | 0 | 15 | 0 | 15 | 5 | 4 | 69 | 78 | 0 | 17 | 2 | 19 | 0 | 0 | 0 | 0 | 112 |
| Total | 2 | 100 | 0 | 102 | 22 | 7 | 246 | 275 | 0 | 141 | 5 | 146 | 0 | 0 | 0 | 0 | 523 |
| Grand Total | 3 | 170 | 0 | 173 | 34 | 10 | 419 | 463 | 0 | 287 | 8 | 295 | 0 | 0 | 0 | 0 | 931 |
| Apprch % | 1.7 | 98.3 | 0 | | 7.3 | 2.2 | 90.5 | | 0 | 97.3 | 2.7 | | 0 | 0 | 0 | | |
| Total % | 0.3 | 18.3 | 0 | 18.6 | 3.7 | 1.1 | 45 | 49.7 | 0 | 30.8 | 0.9 | 31.7 | 0 | 0 | 0 | 0 | |
| PC | 2 | 166 | 0 | 168 | 31 | 9 | 391 | 431 | 0 | 275 | 7 | 282 | 0 | 0 | 0 | 0 | 881 |
| % PC | 66.7 | 97.6 | 0 | 97.1 | 91.2 | 90 | 93.3 | 93.1 | 0 | 95.8 | 87.5 | 95.6 | 0 | 0 | 0 | 0 | 94.6 |
| SU | 1 | 4 | 0 | 5 | 3 | 1 | 25 | 29 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 47 |
| % SU | 33.3 | 2.4 | 0 | 2.9 | 8.8 | 10 | 6 | 6.3 | 0 | 4.2 | 12.5 | 4.4 | 0 | 0 | 0 | 0 | 5 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 |

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|--|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 1 | 20 | 0 | 21 | 6 | 0 | 58 | 64 | 0 | 38 | 0 | 38 | 0 | 0 | 0 | 0 | 123 |
| 08:00 AM | 1 | 32 | 0 | 33 | 8 | 3 | 65 | 76 | 0 | 58 | 3 | 61 | 0 | 0 | 0 | 0 | 170 |
| 08:15 AM | 1 | 29 | 0 | 30 | 5 | 0 | 55 | 60 | 0 | 31 | 0 | 31 | 0 | 0 | 0 | 0 | 121 |
| 08:30 AM | 0 | 24 | 0 | 24 | 4 | 0 | 57 | 61 | 0 | 35 | 0 | 35 | 0 | 0 | 0 | 0 | 120 |
| Total Volume | 3 | 105 | 0 | 108 | 23 | 3 | 235 | 261 | 0 | 162 | 3 | 165 | 0 | 0 | 0 | 0 | 534 |
| % App. Total | 2.8 | 97.2 | 0 | | 8.8 | 1.1 | 90 | | 0 | 98.2 | 1.8 | | 0 | 0 | 0 | | |
| PHF | .750 | .820 | .000 | .818 | .719 | .250 | .904 | .859 | .000 | .698 | .250 | .676 | .000 | .000 | .000 | .000 | .785 |

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98th Pl and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 5 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 8 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 1 | 0 | 1 | 1 | 0 | 12 | 13 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 19 |
| 08:00 AM | 1 | 2 | 0 | 3 | 1 | 1 | 4 | 6 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 13 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 5 |
| 08:45 AM | 0 | 1 | 0 | 1 | 1 | 0 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Total | 1 | 3 | 0 | 4 | 2 | 1 | 13 | 16 | 0 | 7 | 1 | 8 | 0 | 0 | 0 | 0 | 28 |
| Grand Total | 1 | 4 | 0 | 5 | 3 | 1 | 25 | 29 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 47 |
| Apprch % | 20 | 80 | 0 | | 10.3 | 3.4 | 86.2 | | 0 | 92.3 | 7.7 | | 0 | 0 | 0 | | |
| Total % | 2.1 | 8.5 | 0 | 10.6 | 6.4 | 2.1 | 53.2 | 61.7 | 0 | 25.5 | 2.1 | 27.7 | 0 | 0 | 0 | 0 | |

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98th Pl and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 100 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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98th Pl and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/30/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 98th Pl Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 98th Pl Crossing West Leg | | | Int. Total |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Total | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 8 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 3 |
| Total | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 5 |
| Grand Total | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 5 | 5 | 13 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 30.8 | 30.8 | 0 | 7.7 | 7.7 | 0 | 23.1 | 23.1 | 0 | 38.5 | 38.5 | |

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98th Pl and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 1 | 29 | 0 | 30 | 9 | 7 | 72 | 88 | 0 | 26 | 3 | 29 | 0 | 0 | 0 | 0 | 147 |
| 04:15 PM | 1 | 38 | 0 | 39 | 6 | 11 | 68 | 85 | 0 | 29 | 1 | 30 | 0 | 0 | 0 | 0 | 154 |
| 04:30 PM | 4 | 35 | 0 | 39 | 7 | 2 | 66 | 75 | 0 | 25 | 1 | 26 | 0 | 0 | 0 | 0 | 140 |
| 04:45 PM | 1 | 26 | 0 | 27 | 7 | 4 | 74 | 85 | 0 | 16 | 1 | 17 | 0 | 0 | 0 | 0 | 129 |
| Total | 7 | 128 | 0 | 135 | 29 | 24 | 280 | 333 | 0 | 96 | 6 | 102 | 0 | 0 | 0 | 0 | 570 |
| 05:00 PM | 0 | 30 | 0 | 30 | 11 | 2 | 72 | 85 | 0 | 17 | 2 | 19 | 0 | 0 | 0 | 0 | 134 |
| 05:15 PM | 1 | 37 | 0 | 38 | 5 | 5 | 56 | 66 | 0 | 36 | 3 | 39 | 0 | 0 | 0 | 0 | 143 |
| 05:30 PM | 2 | 37 | 0 | 39 | 3 | 7 | 71 | 81 | 0 | 24 | 0 | 24 | 0 | 0 | 0 | 0 | 144 |
| 05:45 PM | 2 | 32 | 0 | 34 | 4 | 10 | 72 | 86 | 0 | 27 | 3 | 30 | 0 | 0 | 0 | 0 | 150 |
| Total | 5 | 136 | 0 | 141 | 23 | 24 | 271 | 318 | 0 | 104 | 8 | 112 | 0 | 0 | 0 | 0 | 571 |
| Grand Total | 12 | 264 | 0 | 276 | 52 | 48 | 551 | 651 | 0 | 200 | 14 | 214 | 0 | 0 | 0 | 0 | 1141 |
| Apprch % | 4.3 | 95.7 | 0 | | 8 | 7.4 | 84.6 | | 0 | 93.5 | 6.5 | | 0 | 0 | 0 | | |
| Total % | 1.1 | 23.1 | 0 | 24.2 | 4.6 | 4.2 | 48.3 | 57.1 | 0 | 17.5 | 1.2 | 18.8 | 0 | 0 | 0 | 0 | |
| PC | 12 | 257 | 0 | 269 | 52 | 47 | 541 | 640 | 0 | 195 | 14 | 209 | 0 | 0 | 0 | 0 | 1118 |
| % PC | 100 | 97.3 | 0 | 97.5 | 100 | 97.9 | 98.2 | 98.3 | 0 | 97.5 | 100 | 97.7 | 0 | 0 | 0 | 0 | 98 |
| SU | 0 | 7 | 0 | 7 | 0 | 1 | 9 | 10 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 22 |
| % SU | 0 | 2.7 | 0 | 2.5 | 0 | 2.1 | 1.6 | 1.5 | 0 | 2.5 | 0 | 2.3 | 0 | 0 | 0 | 0 | 1.9 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|--|-----------------------------|-----------|------|------------|----------------------|-----------|-----------|------------|-----------------------------|-----------|----------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 30 | 0 | 30 | 11 | 2 | 72 | 85 | 0 | 17 | 2 | 19 | 0 | 0 | 0 | 0 | 134 |
| 05:15 PM | 1 | 37 | 0 | 38 | 5 | 5 | 56 | 66 | 0 | 36 | 3 | 39 | 0 | 0 | 0 | 0 | 143 |
| 05:30 PM | 2 | 37 | 0 | 39 | 3 | 7 | 71 | 81 | 0 | 24 | 0 | 24 | 0 | 0 | 0 | 0 | 144 |
| 05:45 PM | 2 | 32 | 0 | 34 | 4 | 10 | 72 | 86 | 0 | 27 | 3 | 30 | 0 | 0 | 0 | 0 | 150 |
| Total Volume | 5 | 136 | 0 | 141 | 23 | 24 | 271 | 318 | 0 | 104 | 8 | 112 | 0 | 0 | 0 | 0 | 571 |
| % App. Total | 3.5 | 96.5 | 0 | | 7.2 | 7.5 | 85.2 | | 0 | 92.9 | 7.1 | | 0 | 0 | 0 | | |
| PHF | .625 | .919 | .000 | .904 | .523 | .600 | .941 | .924 | .000 | .722 | .667 | .718 | .000 | .000 | .000 | .000 | .952 |

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98th Pl and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 2 | 0 | 2 | 0 | 1 | 7 | 8 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 11 |
| 05:00 PM | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| 05:15 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 5 | 0 | 5 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 11 |
| Grand Total | 0 | 7 | 0 | 7 | 0 | 1 | 9 | 10 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 22 |
| Apprch % | 0 | 100 | 0 | | 0 | 10 | 90 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 31.8 | 0 | 31.8 | 0 | 4.5 | 40.9 | 45.5 | 0 | 22.7 | 0 | 22.7 | 0 | 0 | 0 | 0 | |

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98th Pl and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 98th Pl From East | | | | Wentworth Ave From South | | | | 98th Pl From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 100 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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98th Pl and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/30/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 98th Pl Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 98th Pl Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 5 | 5 | 7 |
| 04:45 PM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 8 | 8 | 13 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 05:45 PM | 0 | 1 | 1 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 6 |
| Total | 0 | 2 | 2 | 1 | 6 | 7 | 0 | 2 | 2 | 0 | 0 | 0 | 11 |
| Grand Total | 0 | 3 | 3 | 1 | 7 | 8 | 1 | 4 | 5 | 0 | 8 | 8 | 24 |
| Apprch % | 0 | 100 | | 12.5 | 87.5 | | 20 | 80 | | 0 | 100 | | |
| Total % | 0 | 12.5 | 12.5 | 4.2 | 29.2 | 33.3 | 4.2 | 16.7 | 20.8 | 0 | 33.3 | 33.3 | |

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99th PI and Martin Luther King Dr
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 45 | 4 | 54 | 0 | 3 | 2 | 5 | 8 | 66 | 51 | 125 | 0 | 0 | 0 | 0 | 184 |
| 07:15 AM | 4 | 57 | 3 | 64 | 0 | 1 | 2 | 3 | 6 | 78 | 64 | 148 | 0 | 0 | 0 | 0 | 215 |
| 07:30 AM | 0 | 53 | 8 | 61 | 2 | 2 | 3 | 7 | 5 | 85 | 71 | 161 | 0 | 0 | 0 | 0 | 229 |
| 07:45 AM | 4 | 92 | 15 | 111 | 1 | 3 | 3 | 7 | 23 | 121 | 65 | 209 | 0 | 0 | 0 | 0 | 327 |
| Total | 13 | 247 | 30 | 290 | 3 | 9 | 10 | 22 | 42 | 350 | 251 | 643 | 0 | 0 | 0 | 0 | 955 |
| 08:00 AM | 4 | 69 | 12 | 85 | 1 | 1 | 1 | 3 | 15 | 104 | 69 | 188 | 0 | 0 | 0 | 0 | 276 |
| 08:15 AM | 2 | 69 | 23 | 94 | 3 | 3 | 4 | 10 | 31 | 96 | 51 | 178 | 0 | 0 | 0 | 0 | 282 |
| 08:30 AM | 7 | 58 | 20 | 85 | 0 | 0 | 8 | 8 | 22 | 90 | 59 | 171 | 0 | 0 | 0 | 0 | 264 |
| 08:45 AM | 3 | 111 | 27 | 141 | 4 | 4 | 2 | 10 | 29 | 85 | 57 | 171 | 0 | 0 | 0 | 0 | 322 |
| Total | 16 | 307 | 82 | 405 | 8 | 8 | 15 | 31 | 97 | 375 | 236 | 708 | 0 | 0 | 0 | 0 | 1144 |
| Grand Total | 29 | 554 | 112 | 695 | 11 | 17 | 25 | 53 | 139 | 725 | 487 | 1351 | 0 | 0 | 0 | 0 | 2099 |
| Apprch % | 4.2 | 79.7 | 16.1 | | 20.8 | 32.1 | 47.2 | | 10.3 | 53.7 | 36 | | 0 | 0 | 0 | | |
| Total % | 1.4 | 26.4 | 5.3 | 33.1 | 0.5 | 0.8 | 1.2 | 2.5 | 6.6 | 34.5 | 23.2 | 64.4 | 0 | 0 | 0 | 0 | |
| PC | 27 | 526 | 112 | 665 | 11 | 16 | 25 | 52 | 138 | 700 | 476 | 1314 | 0 | 0 | 0 | 0 | 2031 |
| % PC | 93.1 | 94.9 | 100 | 95.7 | 100 | 94.1 | 100 | 98.1 | 99.3 | 96.6 | 97.7 | 97.3 | 0 | 0 | 0 | 0 | 96.8 |
| SU | 2 | 26 | 0 | 28 | 0 | 1 | 0 | 1 | 1 | 25 | 11 | 37 | 0 | 0 | 0 | 0 | 66 |
| % SU | 6.9 | 4.7 | 0 | 4 | 0 | 5.9 | 0 | 1.9 | 0.7 | 3.4 | 2.3 | 2.7 | 0 | 0 | 0 | 0 | 3.1 |
| MU | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| % MU | 0 | 0.4 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|--|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 09:00 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 4 | 92 | 15 | 111 | 1 | 3 | 3 | 7 | 23 | 121 | 65 | 209 | 0 | 0 | 0 | 0 | 327 |
| 08:00 AM | 4 | 69 | 12 | 85 | 1 | 1 | 1 | 3 | 15 | 104 | 69 | 188 | 0 | 0 | 0 | 0 | 276 |
| 08:15 AM | 2 | 69 | 23 | 94 | 3 | 3 | 4 | 10 | 31 | 96 | 51 | 178 | 0 | 0 | 0 | 0 | 282 |
| 08:30 AM | 7 | 58 | 20 | 85 | 0 | 0 | 8 | 8 | 22 | 90 | 59 | 171 | 0 | 0 | 0 | 0 | 264 |
| Total Volume | 17 | 288 | 70 | 375 | 5 | 7 | 16 | 28 | 91 | 411 | 244 | 746 | 0 | 0 | 0 | 0 | 1149 |
| % App. Total | 4.5 | 76.8 | 18.7 | | 17.9 | 25 | 57.1 | | 12.2 | 55.1 | 32.7 | | 0 | 0 | 0 | | |
| PHF | .607 | .783 | .761 | .845 | .417 | .583 | .500 | .700 | .734 | .849 | .884 | .892 | .000 | .000 | .000 | .000 | .878 |

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99th PI and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 2

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 10 |
| 07:15 AM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 5 | 0 | 0 | 0 | 0 | 9 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 7 |
| 07:45 AM | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 13 |
| Total | 2 | 15 | 0 | 17 | 0 | 1 | 0 | 1 | 1 | 16 | 4 | 21 | 0 | 0 | 0 | 0 | 39 |
| 08:00 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 08:15 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| 08:30 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 6 | 0 | 0 | 0 | 0 | 9 |
| 08:45 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 0 | 0 | 0 | 0 | 9 |
| Total | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 9 | 7 | 16 | 0 | 0 | 0 | 0 | 27 |
| Grand Total | 2 | 26 | 0 | 28 | 0 | 1 | 0 | 1 | 1 | 25 | 11 | 37 | 0 | 0 | 0 | 0 | 66 |
| Apprch % | 7.1 | 92.9 | 0 | | 0 | 100 | 0 | | 2.7 | 67.6 | 29.7 | | 0 | 0 | 0 | | |
| Total % | 3 | 39.4 | 0 | 42.4 | 0 | 1.5 | 0 | 1.5 | 1.5 | 37.9 | 16.7 | 56.1 | 0 | 0 | 0 | 0 | |

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Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 3

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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99th Pl and Martin Luther King Dr

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/30/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 99th Pl Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 99th Pl Crossing West Leg | | | |
|-------------|---|------|------------|------------------------------|------|------------|---|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 07:30 AM | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| 07:45 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 0 | 0 | 3 | 3 | 13 |
| 08:00 AM | 0 | 2 | 2 | 1 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 08:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 4 | 6 |
| 08:30 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 3 | 3 | 5 |
| 08:45 AM | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 3 |
| Total | 0 | 2 | 2 | 1 | 14 | 15 | 1 | 0 | 1 | 0 | 8 | 8 | 26 |
| Grand Total | 0 | 2 | 2 | 1 | 24 | 25 | 1 | 0 | 1 | 0 | 11 | 11 | 39 |
| Apprch % | 0 | 100 | | 4 | 96 | | 100 | 0 | | 0 | 100 | | |
| Total % | 0 | 5.1 | 5.1 | 2.6 | 61.5 | 64.1 | 2.6 | 0 | 2.6 | 0 | 28.2 | 28.2 | |

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99th PI and Martin Luther King Dr
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 13 | 163 | 18 | 194 | 10 | 19 | 23 | 52 | 13 | 68 | 49 | 130 | 0 | 0 | 0 | 0 | 376 |
| 04:15 PM | 16 | 206 | 6 | 228 | 10 | 19 | 21 | 50 | 17 | 61 | 23 | 101 | 0 | 0 | 0 | 0 | 379 |
| 04:30 PM | 12 | 176 | 16 | 204 | 13 | 22 | 25 | 60 | 14 | 71 | 25 | 110 | 0 | 0 | 0 | 0 | 374 |
| 04:45 PM | 9 | 272 | 33 | 314 | 9 | 20 | 12 | 41 | 19 | 67 | 33 | 119 | 0 | 0 | 0 | 0 | 474 |
| Total | 50 | 817 | 73 | 940 | 42 | 80 | 81 | 203 | 63 | 267 | 130 | 460 | 0 | 0 | 0 | 0 | 1603 |
| 05:00 PM | 6 | 232 | 19 | 257 | 17 | 32 | 40 | 89 | 14 | 63 | 31 | 108 | 0 | 0 | 0 | 0 | 454 |
| 05:15 PM | 21 | 192 | 19 | 232 | 7 | 31 | 37 | 75 | 8 | 43 | 44 | 95 | 0 | 0 | 0 | 0 | 402 |
| 05:30 PM | 7 | 201 | 7 | 215 | 6 | 21 | 20 | 47 | 3 | 54 | 33 | 90 | 0 | 0 | 0 | 0 | 352 |
| 05:45 PM | 10 | 187 | 14 | 211 | 8 | 10 | 13 | 31 | 6 | 50 | 30 | 86 | 0 | 0 | 0 | 0 | 328 |
| Total | 44 | 812 | 59 | 915 | 38 | 94 | 110 | 242 | 31 | 210 | 138 | 379 | 0 | 0 | 0 | 0 | 1536 |
| Grand Total | 94 | 1629 | 132 | 1855 | 80 | 174 | 191 | 445 | 94 | 477 | 268 | 839 | 0 | 0 | 0 | 0 | 3139 |
| Apprch % | 5.1 | 87.8 | 7.1 | | 18 | 39.1 | 42.9 | | 11.2 | 56.9 | 31.9 | | 0 | 0 | 0 | | |
| Total % | 3 | 51.9 | 4.2 | 59.1 | 2.5 | 5.5 | 6.1 | 14.2 | 3 | 15.2 | 8.5 | 26.7 | 0 | 0 | 0 | 0 | |
| PC | 94 | 1614 | 132 | 1840 | 80 | 174 | 191 | 445 | 93 | 467 | 268 | 828 | 0 | 0 | 0 | 0 | 3113 |
| % PC | 100 | 99.1 | 100 | 99.2 | 100 | 100 | 100 | 100 | 98.9 | 97.9 | 100 | 98.7 | 0 | 0 | 0 | 0 | 99.2 |
| SU | 0 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 0 | 0 | 0 | 0 | 25 |
| % SU | 0 | 0.9 | 0 | 0.8 | 0 | 0 | 0 | 0 | 1.1 | 2.1 | 0 | 1.3 | 0 | 0 | 0 | 0 | 0.8 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|--|-------------------------------------|------------|-----------|------------|----------------------|-----------|-----------|------------|-------------------------------------|-----------|-----------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | |
| 04:30 PM | 12 | 176 | 16 | 204 | 13 | 22 | 25 | 60 | 14 | 71 | 25 | 110 | 0 | 0 | 0 | 0 | 374 |
| 04:45 PM | 9 | 272 | 33 | 314 | 9 | 20 | 12 | 41 | 19 | 67 | 33 | 119 | 0 | 0 | 0 | 0 | 474 |
| 05:00 PM | 6 | 232 | 19 | 257 | 17 | 32 | 40 | 89 | 14 | 63 | 31 | 108 | 0 | 0 | 0 | 0 | 454 |
| 05:15 PM | 21 | 192 | 19 | 232 | 7 | 31 | 37 | 75 | 8 | 43 | 44 | 95 | 0 | 0 | 0 | 0 | 402 |
| Total Volume | 48 | 872 | 87 | 1007 | 46 | 105 | 114 | 265 | 55 | 244 | 133 | 432 | 0 | 0 | 0 | 0 | 1704 |
| % App. Total | 4.8 | 86.6 | 8.6 | | 17.4 | 39.6 | 43 | | 12.7 | 56.5 | 30.8 | | 0 | 0 | 0 | | |
| PHF | .571 | .801 | .659 | .802 | .676 | .820 | .713 | .744 | .724 | .859 | .756 | .908 | .000 | .000 | .000 | .000 | .899 |

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99th PI and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 6

Groups Printed- SU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 15 |
| 05:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 05:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 10 |
| Grand Total | 0 | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 0 | 0 | 0 | 0 | 25 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 9.1 | 90.9 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 56 | 0 | 56 | 0 | 0 | 0 | 0 | 4 | 40 | 0 | 44 | 0 | 0 | 0 | 0 | |

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Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/30/2012

Page No : 7

Groups Printed- MU

| | Martin Luther King Dr From North | | | | 99th PI From East | | | | Martin Luther King Dr From South | | | | 99th PI From West | | | | |
|-------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|-------------------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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99th Pl and Martin Luther King Dr

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/30/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Martin Luther King Dr Crossing North Leg | | | 99th Pl Crossing East Leg | | | Martin Luther King Dr Crossing South Leg | | | 99th Pl Crossing West Leg | | | |
|-------------|---|------|------------|------------------------------|------|------------|---|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 1 | 4 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 04:45 PM | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 7 | 7 | 10 |
| Total | 0 | 0 | 0 | 1 | 4 | 5 | 0 | 0 | 0 | 3 | 11 | 14 | 19 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| 05:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 3 |
| Total | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 5 | 5 | 10 |
| Grand Total | 0 | 0 | 0 | 1 | 9 | 10 | 0 | 0 | 0 | 3 | 16 | 19 | 29 |
| Apprch % | 0 | 0 | | 10 | 90 | | 0 | 0 | | 15.8 | 84.2 | | |
| Total % | 0 | 0 | | 3.4 | 31 | 34.5 | 0 | 0 | | 10.3 | 55.2 | 65.5 | |

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99th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 1

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 2 | 22 | 0 | 24 | 2 | 61 | 2 | 65 | 0 | 28 | 122 | 150 | 0 | 0 | 0 | 0 | 239 |
| 07:15 AM | 6 | 28 | 0 | 34 | 5 | 74 | 0 | 79 | 0 | 42 | 144 | 186 | 0 | 0 | 0 | 0 | 299 |
| 07:30 AM | 12 | 31 | 0 | 43 | 2 | 61 | 5 | 68 | 0 | 50 | 129 | 179 | 0 | 0 | 0 | 0 | 290 |
| 07:45 AM | 9 | 47 | 0 | 56 | 4 | 61 | 2 | 67 | 0 | 73 | 137 | 210 | 0 | 0 | 0 | 0 | 333 |
| Total | 29 | 128 | 0 | 157 | 13 | 257 | 9 | 279 | 0 | 193 | 532 | 725 | 0 | 0 | 0 | 0 | 1161 |
| 08:00 AM | 5 | 37 | 0 | 42 | 5 | 64 | 4 | 73 | 0 | 60 | 130 | 190 | 0 | 0 | 0 | 0 | 305 |
| 08:15 AM | 5 | 47 | 0 | 52 | 2 | 53 | 8 | 63 | 0 | 36 | 98 | 134 | 0 | 0 | 0 | 0 | 249 |
| 08:30 AM | 2 | 36 | 0 | 38 | 2 | 31 | 7 | 40 | 0 | 36 | 87 | 123 | 0 | 0 | 0 | 0 | 201 |
| 08:45 AM | 1 | 47 | 0 | 48 | 3 | 50 | 13 | 66 | 0 | 42 | 94 | 136 | 0 | 0 | 0 | 0 | 250 |
| Total | 13 | 167 | 0 | 180 | 12 | 198 | 32 | 242 | 0 | 174 | 409 | 583 | 0 | 0 | 0 | 0 | 1005 |
| Grand Total | 42 | 295 | 0 | 337 | 25 | 455 | 41 | 521 | 0 | 367 | 941 | 1308 | 0 | 0 | 0 | 0 | 2166 |
| Apprch % | 12.5 | 87.5 | 0 | | 4.8 | 87.3 | 7.9 | | 0 | 28.1 | 71.9 | | 0 | 0 | 0 | | |
| Total % | 1.9 | 13.6 | 0 | 15.6 | 1.2 | 21 | 1.9 | 24.1 | 0 | 16.9 | 43.4 | 60.4 | 0 | 0 | 0 | 0 | |
| PC | 39 | 244 | 0 | 283 | 25 | 445 | 39 | 509 | 0 | 311 | 907 | 1218 | 0 | 0 | 0 | 0 | 2010 |
| % PC | 92.9 | 82.7 | 0 | 84 | 100 | 97.8 | 95.1 | 97.7 | 0 | 84.7 | 96.4 | 93.1 | 0 | 0 | 0 | 0 | 92.8 |
| SU | 3 | 51 | 0 | 54 | 0 | 10 | 2 | 12 | 0 | 55 | 31 | 86 | 0 | 0 | 0 | 0 | 152 |
| % SU | 7.1 | 17.3 | 0 | 16 | 0 | 2.2 | 4.9 | 2.3 | 0 | 15 | 3.3 | 6.6 | 0 | 0 | 0 | 0 | 7 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 4 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.3 | 0.3 | 0 | 0 | 0 | 0 | 0.2 |

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|--|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 6 | 28 | 0 | 34 | 5 | 74 | 0 | 79 | 0 | 42 | 144 | 186 | 0 | 0 | 0 | 0 | 299 |
| 07:30 AM | 12 | 31 | 0 | 43 | 2 | 61 | 5 | 68 | 0 | 50 | 129 | 179 | 0 | 0 | 0 | 0 | 290 |
| 07:45 AM | 9 | 47 | 0 | 56 | 4 | 61 | 2 | 67 | 0 | 73 | 137 | 210 | 0 | 0 | 0 | 0 | 333 |
| 08:00 AM | 5 | 37 | 0 | 42 | 5 | 64 | 4 | 73 | 0 | 60 | 130 | 190 | 0 | 0 | 0 | 0 | 305 |
| Total Volume | 32 | 143 | 0 | 175 | 16 | 260 | 11 | 287 | 0 | 225 | 540 | 765 | 0 | 0 | 0 | 0 | 1227 |
| % App. Total | 18.3 | 81.7 | 0 | | 5.6 | 90.6 | 3.8 | | 0 | 29.4 | 70.6 | | 0 | 0 | 0 | | |
| PHF | .667 | .761 | .000 | .781 | .800 | .878 | .550 | .908 | .000 | .771 | .938 | .911 | .000 | .000 | .000 | .000 | .921 |

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99th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 2

Groups Printed- SU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 6 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 8 | 6 | 14 | 0 | 0 | 0 | 0 | 22 |
| 07:15 AM | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 0 | 8 | 4 | 12 | 0 | 0 | 0 | 0 | 19 |
| 07:30 AM | 1 | 7 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 17 |
| 07:45 AM | 0 | 8 | 0 | 8 | 0 | 1 | 1 | 2 | 0 | 9 | 4 | 13 | 0 | 0 | 0 | 0 | 23 |
| Total | 1 | 27 | 0 | 28 | 0 | 5 | 1 | 6 | 0 | 30 | 17 | 47 | 0 | 0 | 0 | 0 | 81 |
| 08:00 AM | 1 | 7 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 17 |
| 08:15 AM | 1 | 4 | 0 | 5 | 0 | 1 | 1 | 2 | 0 | 9 | 2 | 11 | 0 | 0 | 0 | 0 | 18 |
| 08:30 AM | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 12 |
| 08:45 AM | 0 | 7 | 0 | 7 | 0 | 3 | 0 | 3 | 0 | 6 | 8 | 14 | 0 | 0 | 0 | 0 | 24 |
| Total | 2 | 24 | 0 | 26 | 0 | 5 | 1 | 6 | 0 | 25 | 14 | 39 | 0 | 0 | 0 | 0 | 71 |
| Grand Total | 3 | 51 | 0 | 54 | 0 | 10 | 2 | 12 | 0 | 55 | 31 | 86 | 0 | 0 | 0 | 0 | 152 |
| Apprch % | 5.6 | 94.4 | 0 | | 0 | 83.3 | 16.7 | | 0 | 64 | 36 | | 0 | 0 | 0 | | |
| Total % | 2 | 33.6 | 0 | 35.5 | 0 | 6.6 | 1.3 | 7.9 | 0 | 36.2 | 20.4 | 56.6 | 0 | 0 | 0 | 0 | |

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99th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 3

Groups Printed- MU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 4 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 25 | 75 | | 0 | 0 | 0 | | |
| Total % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 25 | 75 | 100 | 0 | 0 | 0 | | |

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99th St and Michigan Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/8/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 99th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|------------------------------|------|------------|------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:15 AM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:30 AM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Total | 0 | 0 | 0 | 0 | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| 08:00 AM | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 08:15 AM | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:30 AM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:45 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 4 | 4 | 0 | 17 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Grand Total | 0 | 4 | 4 | 0 | 42 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 0 | | 0 | 0 | | |
| Total % | 0 | 8.7 | 8.7 | 0 | 91.3 | 91.3 | 0 | 0 | 0 | 0 | 0 | 0 | |

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99th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/8/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 9 | 82 | 0 | 91 | 1 | 58 | 8 | 67 | 0 | 27 | 52 | 79 | 0 | 0 | 0 | 0 | 237 |
| 04:15 PM | 2 | 72 | 0 | 74 | 1 | 41 | 12 | 54 | 0 | 33 | 78 | 111 | 0 | 0 | 0 | 0 | 239 |
| 04:30 PM | 9 | 71 | 0 | 80 | 2 | 42 | 5 | 49 | 0 | 42 | 68 | 110 | 0 | 0 | 0 | 0 | 239 |
| 04:45 PM | 1 | 71 | 0 | 72 | 1 | 38 | 6 | 45 | 0 | 33 | 70 | 103 | 0 | 0 | 0 | 0 | 220 |
| Total | 21 | 296 | 0 | 317 | 5 | 179 | 31 | 215 | 0 | 135 | 268 | 403 | 0 | 0 | 0 | 0 | 935 |
| 05:00 PM | 4 | 66 | 0 | 70 | 2 | 60 | 6 | 68 | 0 | 33 | 69 | 102 | 0 | 0 | 0 | 0 | 240 |
| 05:15 PM | 2 | 66 | 0 | 68 | 0 | 81 | 7 | 88 | 0 | 32 | 60 | 92 | 0 | 0 | 0 | 0 | 248 |
| 05:30 PM | 5 | 57 | 0 | 62 | 4 | 64 | 8 | 76 | 0 | 23 | 58 | 81 | 0 | 0 | 0 | 0 | 219 |
| 05:45 PM | 5 | 67 | 0 | 72 | 3 | 51 | 8 | 62 | 0 | 32 | 66 | 98 | 0 | 0 | 0 | 0 | 232 |
| Total | 16 | 256 | 0 | 272 | 9 | 256 | 29 | 294 | 0 | 120 | 253 | 373 | 0 | 0 | 0 | 0 | 939 |
| Grand Total | 37 | 552 | 0 | 589 | 14 | 435 | 60 | 509 | 0 | 255 | 521 | 776 | 0 | 0 | 0 | 0 | 1874 |
| Apprch % | 6.3 | 93.7 | 0 | | 2.8 | 85.5 | 11.8 | | 0 | 32.9 | 67.1 | | 0 | 0 | 0 | | |
| Total % | 2 | 29.5 | 0 | 31.4 | 0.7 | 23.2 | 3.2 | 27.2 | 0 | 13.6 | 27.8 | 41.4 | 0 | 0 | 0 | 0 | |
| PC | 37 | 513 | 0 | 550 | 14 | 427 | 60 | 501 | 0 | 210 | 514 | 724 | 0 | 0 | 0 | 0 | 1775 |
| % PC | 100 | 92.9 | 0 | 93.4 | 100 | 98.2 | 100 | 98.4 | 0 | 82.4 | 98.7 | 93.3 | 0 | 0 | 0 | 0 | 94.7 |
| SU | 0 | 39 | 0 | 39 | 0 | 8 | 0 | 8 | 0 | 45 | 7 | 52 | 0 | 0 | 0 | 0 | 99 |
| % SU | 0 | 7.1 | 0 | 6.6 | 0 | 1.8 | 0 | 1.6 | 0 | 17.6 | 1.3 | 6.7 | 0 | 0 | 0 | 0 | 5.3 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|--|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 6 | 28 | 0 | 34 | 5 | 74 | 0 | 79 | 0 | 42 | 144 | 186 | 0 | 0 | 0 | 0 | 299 |
| 07:30 AM | 12 | 31 | 0 | 43 | 2 | 61 | 5 | 68 | 0 | 50 | 129 | 179 | 0 | 0 | 0 | 0 | 290 |
| 07:45 AM | 9 | 47 | 0 | 56 | 4 | 61 | 2 | 67 | 0 | 73 | 137 | 210 | 0 | 0 | 0 | 0 | 333 |
| 08:00 AM | 5 | 37 | 0 | 42 | 5 | 64 | 4 | 73 | 0 | 60 | 130 | 190 | 0 | 0 | 0 | 0 | 305 |
| Total Volume | 32 | 143 | 0 | 175 | 16 | 260 | 11 | 287 | 0 | 225 | 540 | 765 | 0 | 0 | 0 | 0 | 1227 |
| % App. Total | 18.3 | 81.7 | 0 | | 5.6 | 90.6 | 3.8 | | 0 | 29.4 | 70.6 | | 0 | 0 | 0 | | |
| PHF | .667 | .761 | .000 | .781 | .800 | .878 | .550 | .908 | .000 | .771 | .938 | .911 | .000 | .000 | .000 | .000 | .921 |

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99th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 6

Groups Printed- SU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 10 |
| 04:15 PM | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 7 | 2 | 9 | 0 | 0 | 0 | 0 | 15 |
| 04:30 PM | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 13 |
| 04:45 PM | 0 | 5 | 0 | 5 | 0 | 2 | 0 | 2 | 0 | 6 | 2 | 8 | 0 | 0 | 0 | 0 | 15 |
| Total | 0 | 20 | 0 | 20 | 0 | 4 | 0 | 4 | 0 | 24 | 5 | 29 | 0 | 0 | 0 | 0 | 53 |
| 05:00 PM | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 13 |
| 05:15 PM | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 12 |
| 05:30 PM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 6 |
| 05:45 PM | 0 | 6 | 0 | 6 | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 15 |
| Total | 0 | 19 | 0 | 19 | 0 | 4 | 0 | 4 | 0 | 21 | 2 | 23 | 0 | 0 | 0 | 0 | 46 |
| Grand Total | 0 | 39 | 0 | 39 | 0 | 8 | 0 | 8 | 0 | 45 | 7 | 52 | 0 | 0 | 0 | 0 | 99 |
| Apprch % | 0 | 100 | 0 | | 0 | 100 | 0 | | 0 | 86.5 | 13.5 | | 0 | 0 | 0 | | |
| Total % | 0 | 39.4 | 0 | 39.4 | 0 | 8.1 | 0 | 8.1 | 0 | 45.5 | 7.1 | 52.5 | 0 | 0 | 0 | 0 | |

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99th St and Michigan Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/8/2012

Page No : 7

Groups Printed- MU

| | Michigan Ave From North | | | | 99th St From East | | | | Michigan Ave From South | | | | 99th St From West | | | | |
|-------------|----------------------------|------|------|------------|----------------------|------|------|------------|----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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99th St and Michigan Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/8/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Michigan Ave Crossing North Leg | | | 99th St Crossing East Leg | | | Michigan Ave Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|------------------------------------|------|------------|------------------------------|------|------------|------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 04:15 PM | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 04:30 PM | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 2 | 2 | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 05:00 PM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 1 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Grand Total | 0 | 3 | 3 | 0 | 17 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 0 | | 0 | 0 | | |
| Total % | 0 | 15 | 15 | 0 | 85 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | |

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99th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 1

Groups Printed- PC - SU - MU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 27 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 70 | 4 | 0 | 11 | 15 | 112 |
| 07:15 AM | 0 | 27 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 71 | 5 | 0 | 11 | 16 | 114 |
| 07:30 AM | 4 | 26 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 83 | 2 | 85 | 2 | 0 | 9 | 11 | 126 |
| 07:45 AM | 0 | 56 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 92 | 3 | 95 | 0 | 0 | 15 | 15 | 166 |
| Total | 4 | 136 | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 316 | 5 | 321 | 11 | 0 | 46 | 57 | 518 |
| 08:00 AM | 3 | 34 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 72 | 3 | 75 | 7 | 0 | 18 | 25 | 137 |
| 08:15 AM | 5 | 43 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 87 | 2 | 89 | 5 | 0 | 19 | 24 | 161 |
| 08:30 AM | 2 | 39 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 66 | 1 | 67 | 8 | 0 | 5 | 13 | 121 |
| 08:45 AM | 0 | 54 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 74 | 2 | 76 | 6 | 0 | 11 | 17 | 147 |
| Total | 10 | 170 | 0 | 180 | 0 | 0 | 0 | 0 | 0 | 299 | 8 | 307 | 26 | 0 | 53 | 79 | 566 |
| Grand Total | 14 | 306 | 0 | 320 | 0 | 0 | 0 | 0 | 0 | 615 | 13 | 628 | 37 | 0 | 99 | 136 | 1084 |
| Apprch % | 4.4 | 95.6 | 0 | | 0 | 0 | 0 | | 0 | 97.9 | 2.1 | | 27.2 | 0 | 72.8 | | |
| Total % | 1.3 | 28.2 | 0 | 29.5 | 0 | 0 | 0 | 0 | 0 | 56.7 | 1.2 | 57.9 | 3.4 | 0 | 9.1 | 12.5 | |
| PC | 14 | 296 | 0 | 310 | 0 | 0 | 0 | 0 | 0 | 601 | 13 | 614 | 35 | 0 | 98 | 133 | 1057 |
| % PC | 100 | 96.7 | 0 | 96.9 | 0 | 0 | 0 | 0 | 0 | 97.7 | 100 | 97.8 | 94.6 | 0 | 99 | 97.8 | 97.5 |
| SU | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 2 | 0 | 1 | 3 | 24 |
| % SU | 0 | 2.9 | 0 | 2.8 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1.9 | 5.4 | 0 | 1 | 2.2 | 2.2 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| % MU | 0 | 0.3 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0.3 |

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|--|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 4 | 26 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 83 | 2 | 85 | 2 | 0 | 9 | 11 | 126 |
| 07:45 AM | 0 | 56 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 92 | 3 | 95 | 0 | 0 | 15 | 15 | 166 |
| 08:00 AM | 3 | 34 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 72 | 3 | 75 | 7 | 0 | 18 | 25 | 137 |
| 08:15 AM | 5 | 43 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 87 | 2 | 89 | 5 | 0 | 19 | 24 | 161 |
| Total Volume | 12 | 159 | 0 | 171 | 0 | 0 | 0 | 0 | 0 | 334 | 10 | 344 | 14 | 0 | 61 | 75 | 590 |
| % App. Total | 7 | 93 | 0 | | 0 | 0 | 0 | | 0 | 97.1 | 2.9 | | 18.7 | 0 | 81.3 | | |
| PHF | .600 | .710 | .000 | .763 | .000 | .000 | .000 | .000 | .000 | .908 | .833 | .905 | .500 | .000 | .803 | .750 | .889 |

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www.RWAengineers.com

99th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 2

Groups Printed- SU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 9 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 3 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 1 | 0 | 1 | 2 | 16 |
| 08:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 3 |
| Total | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 8 |
| Grand Total | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 2 | 0 | 1 | 3 | 24 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 66.7 | 0 | 33.3 | | |
| Total % | 0 | 37.5 | 0 | 37.5 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 8.3 | 0 | 4.2 | 12.5 | |

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Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 3

Groups Printed- MU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | 0 | 66.7 | 0 | 66.7 | 0 | 0 | 0 | 0 | |

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99th St and State St
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/30/2012
Page No : 4

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 99th St Crossing East Leg | | | State St Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|------------------------------|------|------------|--------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 4 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 4 |
| Grand Total | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 7 |
| Apprch % | 0 | 100 | | 0 | 0 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 14.3 | 14.3 | 0 | 0 | 0 | 0 | 42.9 | 42.9 | 0 | 42.9 | 42.9 | |

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99th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 5

Groups Printed- PC - SU - MU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 2 | 47 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 43 | 5 | 48 | 6 | 0 | 16 | 22 | 119 |
| 04:15 PM | 1 | 63 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 46 | 4 | 50 | 6 | 0 | 9 | 15 | 129 |
| 04:30 PM | 2 | 44 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 44 | 2 | 46 | 6 | 0 | 6 | 12 | 104 |
| 04:45 PM | 4 | 49 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 50 | 1 | 51 | 8 | 0 | 8 | 16 | 120 |
| Total | 9 | 203 | 0 | 212 | 0 | 0 | 0 | 0 | 0 | 183 | 12 | 195 | 26 | 0 | 39 | 65 | 472 |
| 05:00 PM | 4 | 42 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 43 | 0 | 43 | 5 | 0 | 13 | 18 | 107 |
| 05:15 PM | 3 | 57 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 28 | 3 | 31 | 5 | 0 | 5 | 10 | 101 |
| 05:30 PM | 12 | 72 | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 44 | 1 | 45 | 8 | 0 | 8 | 16 | 145 |
| 05:45 PM | 3 | 51 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 34 | 4 | 38 | 14 | 0 | 11 | 25 | 117 |
| Total | 22 | 222 | 0 | 244 | 0 | 0 | 0 | 0 | 0 | 149 | 8 | 157 | 32 | 0 | 37 | 69 | 470 |
| Grand Total | 31 | 425 | 0 | 456 | 0 | 0 | 0 | 0 | 0 | 332 | 20 | 352 | 58 | 0 | 76 | 134 | 942 |
| Apprch % | 6.8 | 93.2 | 0 | | 0 | 0 | 0 | | 0 | 94.3 | 5.7 | | 43.3 | 0 | 56.7 | | |
| Total % | 3.3 | 45.1 | 0 | 48.4 | 0 | 0 | 0 | 0 | 0 | 35.2 | 2.1 | 37.4 | 6.2 | 0 | 8.1 | 14.2 | |
| PC | 31 | 423 | 0 | 454 | 0 | 0 | 0 | 0 | 0 | 327 | 20 | 347 | 57 | 0 | 76 | 133 | 934 |
| % PC | 100 | 99.5 | 0 | 99.6 | 0 | 0 | 0 | 0 | 0 | 98.5 | 100 | 98.6 | 98.3 | 0 | 100 | 99.3 | 99.2 |
| SU | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 8 |
| % SU | 0 | 0.5 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0 | 1.4 | 1.7 | 0 | 0 | 0.7 | 0.8 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|--|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | 4 | 49 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 50 | 1 | 51 | 8 | 0 | 8 | 16 | 120 |
| 05:00 PM | 4 | 42 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 43 | 0 | 43 | 5 | 0 | 13 | 18 | 107 |
| 05:15 PM | 3 | 57 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 28 | 3 | 31 | 5 | 0 | 5 | 10 | 101 |
| 05:30 PM | 12 | 72 | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 44 | 1 | 45 | 8 | 0 | 8 | 16 | 145 |
| Total Volume | 23 | 220 | 0 | 243 | 0 | 0 | 0 | 0 | 0 | 165 | 5 | 170 | 26 | 0 | 34 | 60 | 473 |
| % App. Total | 9.5 | 90.5 | 0 | | 0 | 0 | 0 | | 0 | 97.1 | 2.9 | | 43.3 | 0 | 56.7 | | |
| PHF | .479 | .764 | .000 | .723 | .000 | .000 | .000 | .000 | .000 | .825 | .417 | .833 | .813 | .000 | .654 | .833 | .816 |

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Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 6

Groups Printed- SU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 1 | 0 | 0 | 1 | 7 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 1 | 0 | 0 | 1 | 8 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 100 | 0 | 0 | | |
| Total % | 0 | 25 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 62.5 | 0 | 62.5 | 12.5 | 0 | 0 | 12.5 | |

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99th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/30/2012
Page No : 7

Groups Printed- MU

| | State St From North | | | | 99th St From East | | | | State St From South | | | | 99th St From West | | | | |
|-------------|------------------------|------|------|------------|----------------------|------|------|------------|------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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99th St and State St
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/30/2012
Page No : 8

Groups Printed- Peds & Bikes

| | State St Crossing North Leg | | | 99th St Crossing East Leg | | | State St Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|--------------------------------|------|------------|------------------------------|------|------------|--------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| Apprch % | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 100 | | |
| Total % | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 100 | 100 | |

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Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 49 | 2 | 51 | 0 | 0 | 0 | 0 | 9 | 17 | 0 | 26 | 0 | 0 | 4 | 4 | 81 |
| 07:15 AM | 0 | 57 | 3 | 60 | 2 | 0 | 0 | 2 | 6 | 41 | 0 | 47 | 3 | 3 | 2 | 8 | 117 |
| 07:30 AM | 0 | 60 | 5 | 65 | 3 | 0 | 0 | 3 | 6 | 32 | 0 | 38 | 0 | 1 | 3 | 4 | 110 |
| 07:45 AM | 0 | 71 | 6 | 77 | 4 | 0 | 2 | 6 | 12 | 32 | 0 | 44 | 3 | 2 | 2 | 7 | 134 |
| Total | 0 | 237 | 16 | 253 | 9 | 0 | 2 | 11 | 33 | 122 | 0 | 155 | 6 | 6 | 11 | 23 | 442 |
| 08:00 AM | 0 | 67 | 13 | 80 | 5 | 0 | 1 | 6 | 5 | 29 | 0 | 34 | 2 | 1 | 2 | 5 | 125 |
| 08:15 AM | 0 | 70 | 7 | 77 | 4 | 0 | 0 | 4 | 14 | 23 | 0 | 37 | 0 | 1 | 0 | 1 | 119 |
| 08:30 AM | 0 | 64 | 8 | 72 | 1 | 0 | 0 | 1 | 12 | 32 | 0 | 44 | 3 | 3 | 3 | 9 | 126 |
| 08:45 AM | 0 | 69 | 12 | 81 | 5 | 0 | 2 | 7 | 6 | 29 | 0 | 35 | 2 | 3 | 2 | 7 | 130 |
| Total | 0 | 270 | 40 | 310 | 15 | 0 | 3 | 18 | 37 | 113 | 0 | 150 | 7 | 8 | 7 | 22 | 500 |
| Grand Total | 0 | 507 | 56 | 563 | 24 | 0 | 5 | 29 | 70 | 235 | 0 | 305 | 13 | 14 | 18 | 45 | 942 |
| Apprch % | 0 | 90.1 | 9.9 | | 82.8 | 0 | 17.2 | | 23 | 77 | 0 | | 28.9 | 31.1 | 40 | | |
| Total % | 0 | 53.8 | 5.9 | 59.8 | 2.5 | 0 | 0.5 | 3.1 | 7.4 | 24.9 | 0 | 32.4 | 1.4 | 1.5 | 1.9 | 4.8 | |
| PC | 0 | 481 | 55 | 536 | 24 | 0 | 4 | 28 | 69 | 223 | 0 | 292 | 13 | 13 | 18 | 44 | 900 |
| % PC | 0 | 94.9 | 98.2 | 95.2 | 100 | 0 | 80 | 96.6 | 98.6 | 94.9 | 0 | 95.7 | 100 | 92.9 | 100 | 97.8 | 95.5 |
| SU | 0 | 25 | 1 | 26 | 0 | 0 | 1 | 1 | 1 | 12 | 0 | 13 | 0 | 1 | 0 | 1 | 41 |
| % SU | 0 | 4.9 | 1.8 | 4.6 | 0 | 0 | 20 | 3.4 | 1.4 | 5.1 | 0 | 4.3 | 0 | 7.1 | 0 | 2.2 | 4.4 |
| MU | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % MU | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|--|-----------------------------|-----------|-----------|------------|----------------------|------|----------|------------|-----------------------------|-----------|------|------------|----------------------|----------|----------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 0 | 71 | 6 | 77 | 4 | 0 | 2 | 6 | 12 | 32 | 0 | 44 | 3 | 2 | 2 | 7 | 134 |
| 08:00 AM | 0 | 67 | 13 | 80 | 5 | 0 | 1 | 6 | 5 | 29 | 0 | 34 | 2 | 1 | 2 | 5 | 125 |
| 08:15 AM | 0 | 70 | 7 | 77 | 4 | 0 | 0 | 4 | 14 | 23 | 0 | 37 | 0 | 1 | 0 | 1 | 119 |
| 08:30 AM | 0 | 64 | 8 | 72 | 1 | 0 | 0 | 1 | 12 | 32 | 0 | 44 | 3 | 3 | 3 | 9 | 126 |
| Total Volume | 0 | 272 | 34 | 306 | 14 | 0 | 3 | 17 | 43 | 116 | 0 | 159 | 8 | 7 | 7 | 22 | 504 |
| % App. Total | 0 | 88.9 | 11.1 | | 82.4 | 0 | 17.6 | | 27 | 73 | 0 | | 36.4 | 31.8 | 31.8 | | |
| PHF | .000 | .958 | .654 | .956 | .700 | .000 | .375 | .708 | .768 | .906 | .000 | .903 | .667 | .583 | .583 | .611 | .940 |

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Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 2

Groups Printed- SU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 7 |
| 07:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 4 |
| 07:30 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 13 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 1 | 0 | 1 | 20 |
| 08:00 AM | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| 08:15 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| 08:30 AM | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 6 |
| 08:45 AM | 0 | 2 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 12 | 1 | 13 | 0 | 0 | 1 | 1 | 1 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 21 |
| Grand Total | 0 | 25 | 1 | 26 | 0 | 0 | 1 | 1 | 1 | 12 | 0 | 13 | 0 | 1 | 0 | 1 | 41 |
| Apprch % | 0 | 96.2 | 3.8 | | 0 | 0 | 100 | | 7.7 | 92.3 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 61 | 2.4 | 63.4 | 0 | 0 | 2.4 | 2.4 | 2.4 | 29.3 | 0 | 31.7 | 0 | 2.4 | 0 | 2.4 | |

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99th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 3

Groups Printed- MU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

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99th St and Wentworth Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 6/5/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 99th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 3 | 3 | 11 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 3 |
| 08:15 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| 08:45 AM | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 9 |
| Total | 0 | 4 | 4 | 0 | 6 | 6 | 0 | 2 | 2 | 0 | 4 | 4 | 16 |
| Grand Total | 0 | 4 | 4 | 0 | 6 | 6 | 0 | 10 | 10 | 0 | 7 | 7 | 27 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 14.8 | 14.8 | 0 | 22.2 | 22.2 | 0 | 37 | 37 | 0 | 25.9 | 25.9 | |

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99th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 6/5/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 83 | 15 | 98 | 2 | 0 | 0 | 2 | 4 | 16 | 0 | 20 | 3 | 2 | 1 | 6 | 126 |
| 04:15 PM | 0 | 87 | 14 | 101 | 3 | 0 | 0 | 3 | 8 | 21 | 0 | 29 | 4 | 1 | 1 | 6 | 139 |
| 04:30 PM | 0 | 87 | 6 | 93 | 1 | 0 | 1 | 2 | 8 | 20 | 0 | 28 | 7 | 0 | 5 | 12 | 135 |
| 04:45 PM | 0 | 83 | 13 | 96 | 2 | 0 | 2 | 4 | 6 | 18 | 0 | 24 | 5 | 5 | 2 | 12 | 136 |
| Total | 0 | 340 | 48 | 388 | 8 | 0 | 3 | 11 | 26 | 75 | 0 | 101 | 19 | 8 | 9 | 36 | 536 |
| 05:00 PM | 0 | 97 | 9 | 106 | 4 | 0 | 1 | 5 | 6 | 32 | 0 | 38 | 4 | 4 | 3 | 11 | 160 |
| 05:15 PM | 0 | 84 | 9 | 93 | 3 | 0 | 0 | 3 | 6 | 24 | 0 | 30 | 5 | 2 | 4 | 11 | 137 |
| 05:30 PM | 0 | 107 | 13 | 120 | 4 | 0 | 1 | 5 | 6 | 28 | 0 | 34 | 8 | 2 | 6 | 16 | 175 |
| 05:45 PM | 0 | 82 | 13 | 95 | 4 | 0 | 1 | 5 | 8 | 22 | 0 | 30 | 5 | 3 | 0 | 8 | 138 |
| Total | 0 | 370 | 44 | 414 | 15 | 0 | 3 | 18 | 26 | 106 | 0 | 132 | 22 | 11 | 13 | 46 | 610 |
| Grand Total | 0 | 710 | 92 | 802 | 23 | 0 | 6 | 29 | 52 | 181 | 0 | 233 | 41 | 19 | 22 | 82 | 1146 |
| Apprch % | 0 | 88.5 | 11.5 | | 79.3 | 0 | 20.7 | | 22.3 | 77.7 | 0 | | 50 | 23.2 | 26.8 | | |
| Total % | 0 | 62 | 8 | 70 | 2 | 0 | 0.5 | 2.5 | 4.5 | 15.8 | 0 | 20.3 | 3.6 | 1.7 | 1.9 | 7.2 | |
| PC | 0 | 706 | 92 | 798 | 23 | 0 | 6 | 29 | 52 | 179 | 0 | 231 | 41 | 19 | 22 | 82 | 1140 |
| % PC | 0 | 99.4 | 100 | 99.5 | 100 | 0 | 100 | 100 | 100 | 98.9 | 0 | 99.1 | 100 | 100 | 100 | 100 | 99.5 |
| SU | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| % SU | 0 | 0.6 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0 | 1.1 | 0 | 0.9 | 0 | 0 | 0 | 0 | 0.5 |
| MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % MU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|--|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 97 | 9 | 106 | 4 | 0 | 1 | 5 | 6 | 32 | 0 | 38 | 4 | 4 | 3 | 11 | 160 |
| 05:15 PM | 0 | 84 | 9 | 93 | 3 | 0 | 0 | 3 | 6 | 24 | 0 | 30 | 5 | 2 | 4 | 11 | 137 |
| 05:30 PM | 0 | 107 | 13 | 120 | 4 | 0 | 1 | 5 | 6 | 28 | 0 | 34 | 8 | 2 | 6 | 16 | 175 |
| 05:45 PM | 0 | 82 | 13 | 95 | 4 | 0 | 1 | 5 | 8 | 22 | 0 | 30 | 5 | 3 | 0 | 8 | 138 |
| Total Volume | 0 | 370 | 44 | 414 | 15 | 0 | 3 | 18 | 26 | 106 | 0 | 132 | 22 | 11 | 13 | 46 | 610 |
| % App. Total | 0 | 89.4 | 10.6 | | 83.3 | 0 | 16.7 | | 19.7 | 80.3 | 0 | | 47.8 | 23.9 | 28.3 | | |
| PHF | .000 | .864 | .846 | .863 | .938 | .000 | .750 | .900 | .813 | .828 | .000 | .868 | .688 | .688 | .542 | .719 | .871 |

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99th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 6

Groups Printed- SU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Grand Total | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 66.7 | 0 | 66.7 | 0 | 0 | 0 | 0 | 0 | 33.3 | 0 | 33.3 | 0 | 0 | 0 | 0 | |

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99th St and Wentworth Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 6/5/2012

Page No : 7

Groups Printed- MU

| | Wentworth Ave From North | | | | 99th St From East | | | | Wentworth Ave From South | | | | 99th St From West | | | | |
|-------------|-----------------------------|------|------|------------|----------------------|------|------|------------|-----------------------------|------|------|------------|----------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch % | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | |
| Total % | | | | | | | | | | | | | | | | | |

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99th St and Wentworth Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 6/5/2012
Page No : 8

Groups Printed- Peds & Bikes

| | Wentworth Ave Crossing North Leg | | | 99th St Crossing East Leg | | | Wentworth Ave Crossing South Leg | | | 99th St Crossing West Leg | | | |
|-------------|-------------------------------------|------|------------|------------------------------|------|------------|-------------------------------------|------|------------|------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 7 | 7 | 0 | 2 | 2 | 12 |
| 04:15 PM | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 4 | 4 | 0 | 3 | 3 | 10 |
| 04:30 PM | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 2 | 0 | 0 | 0 | 7 |
| 04:45 PM | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 2 | 11 | 13 | 1 | 13 | 14 | 0 | 5 | 5 | 32 |
| 05:00 PM | 0 | 1 | 1 | 2 | 2 | 4 | 0 | 5 | 5 | 0 | 0 | 0 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 1 | 1 | 1 | 2 | 7 |
| 05:30 PM | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 4 | 6 | 0 | 0 | 0 | 7 |
| 05:45 PM | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 4 |
| Total | 0 | 1 | 1 | 2 | 10 | 12 | 2 | 11 | 13 | 1 | 1 | 2 | 28 |
| Grand Total | 0 | 1 | 1 | 4 | 21 | 25 | 3 | 24 | 27 | 1 | 6 | 7 | 60 |
| Apprch % | 0 | 100 | | 16 | 84 | | 11.1 | 88.9 | | 14.3 | 85.7 | | |
| Total % | 0 | 1.7 | 1.7 | 6.7 | 35 | 41.7 | 5 | 40 | 45 | 1.7 | 10 | 11.7 | |

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Ashland Ave and Vermont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 50 | 14 | 69 | 14 | 25 | 11 | 50 | 10 | 65 | 75 | 150 | 47 | 19 | 12 | 78 | 347 |
| 07:15 AM | 8 | 56 | 22 | 86 | 10 | 24 | 6 | 40 | 12 | 81 | 93 | 186 | 41 | 16 | 4 | 61 | 373 |
| 07:30 AM | 11 | 50 | 14 | 75 | 17 | 26 | 7 | 50 | 14 | 94 | 81 | 189 | 55 | 28 | 9 | 92 | 406 |
| 07:45 AM | 21 | 62 | 26 | 109 | 29 | 48 | 14 | 91 | 16 | 101 | 78 | 195 | 59 | 20 | 11 | 90 | 485 |
| Total | 45 | 218 | 76 | 339 | 70 | 123 | 38 | 231 | 52 | 341 | 327 | 720 | 202 | 83 | 36 | 321 | 1611 |
| 08:00 AM | 11 | 79 | 27 | 117 | 22 | 34 | 13 | 69 | 19 | 97 | 76 | 192 | 52 | 33 | 21 | 106 | 484 |
| 08:15 AM | 11 | 67 | 24 | 102 | 17 | 31 | 13 | 61 | 13 | 83 | 88 | 184 | 63 | 25 | 9 | 97 | 444 |
| 08:30 AM | 13 | 45 | 24 | 82 | 22 | 32 | 15 | 69 | 16 | 79 | 86 | 181 | 72 | 15 | 7 | 94 | 426 |
| 08:45 AM | 11 | 87 | 24 | 122 | 18 | 27 | 17 | 62 | 14 | 82 | 75 | 171 | 47 | 16 | 9 | 72 | 427 |
| Total | 46 | 278 | 99 | 423 | 79 | 124 | 58 | 261 | 62 | 341 | 325 | 728 | 234 | 89 | 46 | 369 | 1781 |
| Grand Total | 91 | 496 | 175 | 762 | 149 | 247 | 96 | 492 | 114 | 682 | 652 | 1448 | 436 | 172 | 82 | 690 | 3392 |
| Apprch % | 11.9 | 65.1 | 23 | | 30.3 | 50.2 | 19.5 | | 7.9 | 47.1 | 45 | | 63.2 | 24.9 | 11.9 | | |
| Total % | 2.7 | 14.6 | 5.2 | 22.5 | 4.4 | 7.3 | 2.8 | 14.5 | 3.4 | 20.1 | 19.2 | 42.7 | 12.9 | 5.1 | 2.4 | 20.3 | |
| PC | 91 | 475 | 170 | 736 | 138 | 232 | 84 | 454 | 109 | 640 | 615 | 1364 | 414 | 165 | 77 | 656 | 3210 |
| % PC | 100 | 95.8 | 97.1 | 96.6 | 92.6 | 93.9 | 87.5 | 92.3 | 95.6 | 93.8 | 94.3 | 94.2 | 95 | 95.9 | 93.9 | 95.1 | 94.6 |
| SU | 0 | 17 | 4 | 21 | 8 | 13 | 8 | 29 | 5 | 30 | 34 | 69 | 20 | 7 | 5 | 32 | 151 |
| % SU | 0 | 3.4 | 2.3 | 2.8 | 5.4 | 5.3 | 8.3 | 5.9 | 4.4 | 4.4 | 5.2 | 4.8 | 4.6 | 4.1 | 6.1 | 4.6 | 4.5 |
| MU | 0 | 4 | 1 | 5 | 3 | 2 | 4 | 9 | 0 | 12 | 3 | 15 | 2 | 0 | 0 | 2 | 31 |
| % MU | 0 | 0.8 | 0.6 | 0.7 | 2 | 0.8 | 4.2 | 1.8 | 0 | 1.8 | 0.5 | 1 | 0.5 | 0 | 0 | 0.3 | 0.9 |

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|--|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 21 | 62 | 26 | 109 | 29 | 48 | 14 | 91 | 16 | 101 | 78 | 195 | 59 | 20 | 11 | 90 | 485 |
| 08:00 AM | 11 | 79 | 27 | 117 | 22 | 34 | 13 | 69 | 19 | 97 | 76 | 192 | 52 | 33 | 21 | 106 | 484 |
| 08:15 AM | 11 | 67 | 24 | 102 | 17 | 31 | 13 | 61 | 13 | 83 | 88 | 184 | 63 | 25 | 9 | 97 | 444 |
| 08:30 AM | 13 | 45 | 24 | 82 | 22 | 32 | 15 | 69 | 16 | 79 | 86 | 181 | 72 | 15 | 7 | 94 | 426 |
| Total Volume | 56 | 253 | 101 | 410 | 90 | 145 | 55 | 290 | 64 | 360 | 328 | 752 | 246 | 93 | 48 | 387 | 1839 |
| % App. Total | 13.7 | 61.7 | 24.6 | | 31 | 50 | 19 | | 8.5 | 47.9 | 43.6 | | 63.6 | 24 | 12.4 | | |
| PHF | .667 | .801 | .935 | .876 | .776 | .755 | .917 | .797 | .842 | .891 | .932 | .964 | .854 | .705 | .571 | .913 | .948 |

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Ashland Ave and Vermont Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 2

Groups Printed- SU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 2 | 0 | 2 | 2 | 2 | 1 | 5 | 2 | 5 | 3 | 10 | 1 | 1 | 1 | 3 | 20 |
| 07:15 AM | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 5 | 12 | 17 | 4 | 0 | 1 | 5 | 25 |
| 07:30 AM | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 2 | 5 | 7 | 4 | 3 | 0 | 7 | 18 |
| 07:45 AM | 0 | 2 | 0 | 2 | 1 | 3 | 4 | 8 | 2 | 5 | 2 | 9 | 2 | 0 | 0 | 2 | 21 |
| Total | 0 | 7 | 1 | 8 | 5 | 6 | 5 | 16 | 4 | 17 | 22 | 43 | 11 | 4 | 2 | 17 | 84 |
| 08:00 AM | 0 | 3 | 1 | 4 | 0 | 1 | 0 | 1 | 1 | 6 | 3 | 10 | 1 | 2 | 2 | 5 | 20 |
| 08:15 AM | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 3 | 0 | 1 | 1 | 2 | 4 | 0 | 0 | 4 | 11 |
| 08:30 AM | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 0 | 4 | 3 | 7 | 3 | 0 | 1 | 4 | 14 |
| 08:45 AM | 0 | 6 | 1 | 7 | 1 | 4 | 1 | 6 | 0 | 2 | 5 | 7 | 1 | 1 | 0 | 2 | 22 |
| Total | 0 | 10 | 3 | 13 | 3 | 7 | 3 | 13 | 1 | 13 | 12 | 26 | 9 | 3 | 3 | 15 | 67 |
| Grand Total | 0 | 17 | 4 | 21 | 8 | 13 | 8 | 29 | 5 | 30 | 34 | 69 | 20 | 7 | 5 | 32 | 151 |
| Apprch % | 0 | 81 | 19 | | 27.6 | 44.8 | 27.6 | | 7.2 | 43.5 | 49.3 | | 62.5 | 21.9 | 15.6 | | |
| Total % | 0 | 11.3 | 2.6 | 13.9 | 5.3 | 8.6 | 5.3 | 19.2 | 3.3 | 19.9 | 22.5 | 45.7 | 13.2 | 4.6 | 3.3 | 21.2 | |

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Ashland Ave and Vermont Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 3

Groups Printed- MU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 |
| 07:45 AM | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 3 | 0 | 3 | 3 | 0 | 2 | 5 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 14 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 5 |
| 08:15 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 5 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 |
| 08:45 AM | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 1 | 1 | 2 | 0 | 2 | 2 | 4 | 0 | 7 | 2 | 9 | 2 | 0 | 0 | 2 | 17 |
| Grand Total | 0 | 4 | 1 | 5 | 3 | 2 | 4 | 9 | 0 | 12 | 3 | 15 | 2 | 0 | 0 | 2 | 31 |
| Apprch % | 0 | 80 | 20 | | 33.3 | 22.2 | 44.4 | | 0 | 80 | 20 | | 100 | 0 | 0 | | |
| Total % | 0 | 12.9 | 3.2 | 16.1 | 9.7 | 6.5 | 12.9 | 29 | 0 | 38.7 | 9.7 | 48.4 | 6.5 | 0 | 0 | 6.5 | |

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Ashland Ave and Vermont Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/22/2012

Page No : 4

Groups Printed- Peds & Bikes

| | Ashland Ave Crossing North Leg | | | Vermont Ave Crossing East Leg | | | Ashland Ave Crossing South Leg | | | Vermont Ave Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|----------------------------------|------|------------|-----------------------------------|------|------------|----------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 07:15 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 07:30 AM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 7 |
| 07:45 AM | 0 | 5 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 15 | 15 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 19 |
| 08:00 AM | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:15 AM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:30 AM | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 08:45 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 13 | 13 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 14 |
| Grand Total | 0 | 28 | 28 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 2 | 2 | 33 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 84.8 | 84.8 | 0 | 6.1 | 6.1 | 0 | 3 | 3 | 0 | 6.1 | 6.1 | |

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Ashland Ave and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/22/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 16 | 110 | 42 | 168 | 28 | 38 | 17 | 83 | 16 | 84 | 99 | 199 | 70 | 23 | 9 | 102 | 552 |
| 04:15 PM | 18 | 107 | 50 | 175 | 18 | 40 | 15 | 73 | 15 | 84 | 80 | 179 | 84 | 47 | 14 | 145 | 572 |
| 04:30 PM | 14 | 94 | 53 | 161 | 24 | 35 | 8 | 67 | 16 | 105 | 92 | 213 | 85 | 32 | 10 | 127 | 568 |
| 04:45 PM | 17 | 101 | 31 | 149 | 18 | 34 | 17 | 69 | 11 | 86 | 83 | 180 | 63 | 35 | 14 | 112 | 510 |
| Total | 65 | 412 | 176 | 653 | 88 | 147 | 57 | 292 | 58 | 359 | 354 | 771 | 302 | 137 | 47 | 486 | 2202 |
| 05:00 PM | 14 | 99 | 52 | 165 | 32 | 41 | 20 | 93 | 23 | 86 | 83 | 192 | 127 | 53 | 18 | 198 | 648 |
| 05:15 PM | 21 | 115 | 53 | 189 | 9 | 43 | 8 | 60 | 16 | 84 | 102 | 202 | 86 | 48 | 10 | 144 | 595 |
| 05:30 PM | 12 | 97 | 47 | 156 | 25 | 39 | 5 | 69 | 22 | 70 | 90 | 182 | 88 | 52 | 8 | 148 | 555 |
| 05:45 PM | 9 | 97 | 54 | 160 | 21 | 41 | 23 | 85 | 17 | 100 | 87 | 204 | 66 | 40 | 10 | 116 | 565 |
| Total | 56 | 408 | 206 | 670 | 87 | 164 | 56 | 307 | 78 | 340 | 362 | 780 | 367 | 193 | 46 | 606 | 2363 |
| Grand Total | 121 | 820 | 382 | 1323 | 175 | 311 | 113 | 599 | 136 | 699 | 716 | 1551 | 669 | 330 | 93 | 1092 | 4565 |
| Apprch % | 9.1 | 62 | 28.9 | | 29.2 | 51.9 | 18.9 | | 8.8 | 45.1 | 46.2 | | 61.3 | 30.2 | 8.5 | | |
| Total % | 2.7 | 18 | 8.4 | 29 | 3.8 | 6.8 | 2.5 | 13.1 | 3 | 15.3 | 15.7 | 34 | 14.7 | 7.2 | 2 | 23.9 | |
| PC | 120 | 801 | 379 | 1300 | 172 | 309 | 112 | 593 | 135 | 683 | 702 | 1520 | 657 | 324 | 91 | 1072 | 4485 |
| % PC | 99.2 | 97.7 | 99.2 | 98.3 | 98.3 | 99.4 | 99.1 | 99 | 99.3 | 97.7 | 98 | 98 | 98.2 | 98.2 | 97.8 | 98.2 | 98.2 |
| SU | 1 | 12 | 2 | 15 | 1 | 2 | 1 | 4 | 1 | 12 | 10 | 23 | 8 | 6 | 2 | 16 | 58 |
| % SU | 0.8 | 1.5 | 0.5 | 1.1 | 0.6 | 0.6 | 0.9 | 0.7 | 0.7 | 1.7 | 1.4 | 1.5 | 1.2 | 1.8 | 2.2 | 1.5 | 1.3 |
| MU | 0 | 7 | 1 | 8 | 2 | 0 | 0 | 2 | 0 | 4 | 4 | 8 | 4 | 0 | 0 | 4 | 22 |
| % MU | 0 | 0.9 | 0.3 | 0.6 | 1.1 | 0 | 0 | 0.3 | 0 | 0.6 | 0.6 | 0.5 | 0.6 | 0 | 0 | 0.4 | 0.5 |

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|--|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 14 | 99 | 52 | 165 | 32 | 41 | 20 | 93 | 23 | 86 | 83 | 192 | 127 | 53 | 18 | 198 | 648 |
| 05:15 PM | 21 | 115 | 53 | 189 | 9 | 43 | 8 | 60 | 16 | 84 | 102 | 202 | 86 | 48 | 10 | 144 | 595 |
| 05:30 PM | 12 | 97 | 47 | 156 | 25 | 39 | 5 | 69 | 22 | 70 | 90 | 182 | 88 | 52 | 8 | 148 | 555 |
| 05:45 PM | 9 | 97 | 54 | 160 | 21 | 41 | 23 | 85 | 17 | 100 | 87 | 204 | 66 | 40 | 10 | 116 | 565 |
| Total Volume | 56 | 408 | 206 | 670 | 87 | 164 | 56 | 307 | 78 | 340 | 362 | 780 | 367 | 193 | 46 | 606 | 2363 |
| % App. Total | 8.4 | 60.9 | 30.7 | | 28.3 | 53.4 | 18.2 | | 10 | 43.6 | 46.4 | | 60.6 | 31.8 | 7.6 | | |
| PHF | .667 | .887 | .954 | .886 | .680 | .953 | .609 | .825 | .848 | .850 | .887 | .956 | .722 | .910 | .639 | .765 | .912 |

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Ashland Ave and Vermont Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 6

Groups Printed- SU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 6 | 1 | 0 | 1 | 2 | 10 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 4 | 1 | 1 | 1 | 3 | 8 |
| 04:30 PM | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 2 | 0 | 3 | 10 |
| 04:45 PM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| Total | 1 | 7 | 0 | 8 | 0 | 1 | 1 | 2 | 1 | 9 | 6 | 16 | 3 | 3 | 2 | 8 | 34 |
| 05:00 PM | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 5 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 4 | 1 | 0 | 0 | 1 | 6 |
| 05:30 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 1 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 5 | 2 | 7 | 1 | 1 | 0 | 2 | 0 | 3 | 4 | 7 | 5 | 3 | 0 | 8 | 24 |
| Grand Total | 1 | 12 | 2 | 15 | 1 | 2 | 1 | 4 | 1 | 12 | 10 | 23 | 8 | 6 | 2 | 16 | 58 |
| Apprch % | 6.7 | 80 | 13.3 | | 25 | 50 | 25 | | 4.3 | 52.2 | 43.5 | | 50 | 37.5 | 12.5 | | |
| Total % | 1.7 | 20.7 | 3.4 | 25.9 | 1.7 | 3.4 | 1.7 | 6.9 | 1.7 | 20.7 | 17.2 | 39.7 | 13.8 | 10.3 | 3.4 | 27.6 | |

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Ashland Ave and Vermont Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/22/2012

Page No : 7

Groups Printed- MU

| | Ashland Ave From North | | | | Vermont Ave From East | | | | Ashland Ave From South | | | | Vermont Ave From West | | | | |
|-------------|---------------------------|------|------|------------|--------------------------|------|------|------------|---------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 04:15 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:45 PM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 5 | 0 | 5 | 2 | 0 | 0 | 2 | 0 | 3 | 2 | 5 | 1 | 0 | 0 | 1 | 13 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 05:15 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 4 |
| Total | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 | 0 | 0 | 3 | 9 |
| Grand Total | 0 | 7 | 1 | 8 | 2 | 0 | 0 | 2 | 0 | 4 | 4 | 8 | 4 | 0 | 0 | 4 | 22 |
| Apprch % | 0 | 87.5 | 12.5 | | 100 | 0 | 0 | | 0 | 50 | 50 | | 100 | 0 | 0 | | |
| Total % | 0 | 31.8 | 4.5 | 36.4 | 9.1 | 0 | 0 | 9.1 | 0 | 18.2 | 18.2 | 36.4 | 18.2 | 0 | 0 | 18.2 | |

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Ashland Ave and Vermont Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM Peds

Site Code : 00000000

Start Date : 5/22/2012

Page No : 8

Groups Printed- Peds & Bikes

| | Ashland Ave Crossing North Leg | | | Vermont Ave Crossing East Leg | | | Ashland Ave Crossing South Leg | | | Vermont Ave Crossing West Leg | | | |
|-------------|-----------------------------------|------|------------|----------------------------------|------|------------|-----------------------------------|------|------------|----------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 7 | 7 | 0 | 4 | 4 | 0 | 5 | 5 | 0 | 3 | 3 | 19 |
| 04:15 PM | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 3 | 3 | 15 |
| 04:30 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 7 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 2 | 2 | 5 |
| Total | 0 | 18 | 18 | 0 | 4 | 4 | 0 | 15 | 15 | 0 | 9 | 9 | 46 |
| 05:00 PM | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 4 |
| 05:30 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 6 |
| 05:45 PM | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 5 | 5 | 20 |
| Grand Total | 0 | 30 | 30 | 0 | 4 | 4 | 0 | 18 | 18 | 0 | 14 | 14 | 66 |
| Apprch % | 0 | 100 | | 0 | 100 | | 0 | 100 | | 0 | 100 | | |
| Total % | 0 | 45.5 | 45.5 | 0 | 6.1 | 6.1 | 0 | 27.3 | 27.3 | 0 | 21.2 | 21.2 | |

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Halsted St and Vermont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 1

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 4 | 53 | 3 | 60 | 1 | 16 | 11 | 28 | 17 | 146 | 6 | 169 | 11 | 26 | 9 | 46 | 303 |
| 07:15 AM | 4 | 53 | 5 | 62 | 2 | 18 | 18 | 38 | 20 | 157 | 3 | 180 | 6 | 19 | 4 | 29 | 309 |
| 07:30 AM | 7 | 74 | 1 | 82 | 4 | 26 | 11 | 41 | 20 | 146 | 5 | 171 | 9 | 19 | 15 | 43 | 337 |
| 07:45 AM | 9 | 66 | 3 | 78 | 4 | 33 | 15 | 52 | 24 | 130 | 7 | 161 | 6 | 20 | 9 | 35 | 326 |
| Total | 24 | 246 | 12 | 282 | 11 | 93 | 55 | 159 | 81 | 579 | 21 | 681 | 32 | 84 | 37 | 153 | 1275 |
| 08:00 AM | 10 | 71 | 2 | 83 | 0 | 32 | 21 | 53 | 13 | 126 | 11 | 150 | 11 | 19 | 4 | 34 | 320 |
| 08:15 AM | 9 | 80 | 2 | 91 | 3 | 20 | 12 | 35 | 8 | 127 | 8 | 143 | 11 | 32 | 12 | 55 | 324 |
| 08:30 AM | 8 | 71 | 0 | 79 | 4 | 22 | 13 | 39 | 29 | 118 | 13 | 160 | 6 | 31 | 9 | 46 | 324 |
| 08:45 AM | 9 | 87 | 5 | 101 | 2 | 31 | 9 | 42 | 11 | 111 | 12 | 134 | 7 | 19 | 7 | 33 | 310 |
| Total | 36 | 309 | 9 | 354 | 9 | 105 | 55 | 169 | 61 | 482 | 44 | 587 | 35 | 101 | 32 | 168 | 1278 |
| Grand Total | 60 | 555 | 21 | 636 | 20 | 198 | 110 | 328 | 142 | 1061 | 65 | 1268 | 67 | 185 | 69 | 321 | 2553 |
| Apprch % | 9.4 | 87.3 | 3.3 | | 6.1 | 60.4 | 33.5 | | 11.2 | 83.7 | 5.1 | | 20.9 | 57.6 | 21.5 | | |
| Total % | 2.4 | 21.7 | 0.8 | 24.9 | 0.8 | 7.8 | 4.3 | 12.8 | 5.6 | 41.6 | 2.5 | 49.7 | 2.6 | 7.2 | 2.7 | 12.6 | |
| PC | 58 | 516 | 12 | 586 | 20 | 191 | 103 | 314 | 129 | 1015 | 61 | 1205 | 63 | 176 | 68 | 307 | 2412 |
| % PC | 96.7 | 93 | 57.1 | 92.1 | 100 | 96.5 | 93.6 | 95.7 | 90.8 | 95.7 | 93.8 | 95 | 94 | 95.1 | 98.6 | 95.6 | 94.5 |
| SU | 2 | 26 | 9 | 37 | 0 | 5 | 3 | 8 | 3 | 36 | 4 | 43 | 4 | 6 | 1 | 11 | 99 |
| % SU | 3.3 | 4.7 | 42.9 | 5.8 | 0 | 2.5 | 2.7 | 2.4 | 2.1 | 3.4 | 6.2 | 3.4 | 6 | 3.2 | 1.4 | 3.4 | 3.9 |
| MU | 0 | 13 | 0 | 13 | 0 | 2 | 4 | 6 | 10 | 10 | 0 | 20 | 0 | 3 | 0 | 3 | 42 |
| % MU | 0 | 2.3 | 0 | 2 | 0 | 1 | 3.6 | 1.8 | 7 | 0.9 | 0 | 1.6 | 0 | 1.6 | 0 | 0.9 | 1.6 |

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|--|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | |
| 07:30 AM | 7 | 74 | 1 | 82 | 4 | 26 | 11 | 41 | 20 | 146 | 5 | 171 | 9 | 19 | 15 | 43 | 337 |
| 07:45 AM | 9 | 66 | 3 | 78 | 4 | 33 | 15 | 52 | 24 | 130 | 7 | 161 | 6 | 20 | 9 | 35 | 326 |
| 08:00 AM | 10 | 71 | 2 | 83 | 0 | 32 | 21 | 53 | 13 | 126 | 11 | 150 | 11 | 19 | 4 | 34 | 320 |
| 08:15 AM | 9 | 80 | 2 | 91 | 3 | 20 | 12 | 35 | 8 | 127 | 8 | 143 | 11 | 32 | 12 | 55 | 324 |
| Total Volume | 35 | 291 | 8 | 334 | 11 | 111 | 59 | 181 | 65 | 529 | 31 | 625 | 37 | 90 | 40 | 167 | 1307 |
| % App. Total | 10.5 | 87.1 | 2.4 | | 6.1 | 61.3 | 32.6 | | 10.4 | 84.6 | 5 | | 22.2 | 53.9 | 24 | | |
| PHF | .875 | .909 | .667 | .918 | .688 | .841 | .702 | .854 | .677 | .906 | .705 | .914 | .841 | .703 | .667 | .759 | .970 |

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Halsted St and Vermont Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 2

Groups Printed- SU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 7 | 1 | 9 | 0 | 0 | 0 | 0 | 14 |
| 07:15 AM | 0 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 8 | 0 | 1 | 0 | 1 | 16 |
| 07:30 AM | 1 | 2 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 8 | 0 | 8 | 1 | 0 | 1 | 2 | 15 |
| 07:45 AM | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 8 |
| Total | 1 | 13 | 5 | 19 | 0 | 2 | 0 | 2 | 3 | 24 | 1 | 28 | 1 | 2 | 1 | 4 | 53 |
| 08:00 AM | 1 | 3 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 7 |
| 08:15 AM | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 2 | 0 | 3 | 12 |
| 08:30 AM | 0 | 2 | 0 | 2 | 0 | 1 | 3 | 4 | 0 | 7 | 1 | 8 | 1 | 1 | 0 | 2 | 16 |
| 08:45 AM | 0 | 3 | 2 | 5 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 11 |
| Total | 1 | 13 | 4 | 18 | 0 | 3 | 3 | 6 | 0 | 12 | 3 | 15 | 3 | 4 | 0 | 7 | 46 |
| Grand Total | 2 | 26 | 9 | 37 | 0 | 5 | 3 | 8 | 3 | 36 | 4 | 43 | 4 | 6 | 1 | 11 | 99 |
| Apprch % | 5.4 | 70.3 | 24.3 | | 0 | 62.5 | 37.5 | | 7 | 83.7 | 9.3 | | 36.4 | 54.5 | 9.1 | | |
| Total % | 2 | 26.3 | 9.1 | 37.4 | 0 | 5.1 | 3 | 8.1 | 3 | 36.4 | 4 | 43.4 | 4 | 6.1 | 1 | 11.1 | |

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Halsted St and Vermont Ave

Chicago, IL

7:00 AM - 9:00 AM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 3

Groups Printed- MU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 5 |
| 07:15 AM | 0 | 4 | 0 | 4 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 7 |
| 07:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 0 | 6 | 0 | 6 | 0 | 1 | 2 | 3 | 3 | 5 | 0 | 8 | 0 | 2 | 0 | 2 | 19 |
| 08:00 AM | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 8 |
| 08:15 AM | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 5 |
| 08:30 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 08:45 AM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 7 | 0 | 7 | 0 | 1 | 2 | 3 | 7 | 5 | 0 | 12 | 0 | 1 | 0 | 1 | 23 |
| Grand Total | 0 | 13 | 0 | 13 | 0 | 2 | 4 | 6 | 10 | 10 | 0 | 20 | 0 | 3 | 0 | 3 | 42 |
| Apprch % | 0 | 100 | 0 | | 0 | 33.3 | 66.7 | | 50 | 50 | 0 | | 0 | 100 | 0 | | |
| Total % | 0 | 31 | 0 | 31 | 0 | 4.8 | 9.5 | 14.3 | 23.8 | 23.8 | 0 | 47.6 | 0 | 7.1 | 0 | 7.1 | |

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Halsted St and Vermont Ave
Chicago, IL
7:00 AM - 9:00 AM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 4

Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | Vermont Ave Crossing East Leg | | | Halsted St Crossing South Leg | | | Vermont Ave Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|----------------------------------|------|------------|----------------------------------|------|------------|----------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 07:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 4 |
| 07:15 AM | 0 | 4 | 4 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 7 |
| 07:30 AM | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:45 AM | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 6 |
| Total | 0 | 7 | 7 | 0 | 4 | 4 | 0 | 6 | 6 | 0 | 2 | 2 | 19 |
| 08:00 AM | 0 | 5 | 5 | 0 | 3 | 3 | 3 | 7 | 10 | 0 | 3 | 3 | 21 |
| 08:15 AM | 0 | 3 | 3 | 0 | 0 | 0 | 1 | 6 | 7 | 0 | 1 | 1 | 11 |
| 08:30 AM | 0 | 3 | 3 | 0 | 7 | 7 | 1 | 11 | 12 | 0 | 5 | 5 | 27 |
| 08:45 AM | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 7 | 7 | 0 | 0 | 0 | 12 |
| Total | 0 | 11 | 11 | 0 | 15 | 15 | 5 | 31 | 36 | 0 | 9 | 9 | 71 |
| Grand Total | 0 | 18 | 18 | 0 | 19 | 19 | 5 | 37 | 42 | 0 | 11 | 11 | 90 |
| Apprch % | 0 | 100 | | 0 | 100 | | 11.9 | 88.1 | | 0 | 100 | | |
| Total % | 0 | 20 | 20 | 0 | 21.1 | 21.1 | 5.6 | 41.1 | 46.7 | 0 | 12.2 | 12.2 | |

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Halsted St and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM
Site Code : 00000000
Start Date : 5/17/2012
Page No : 5

Groups Printed- PC - SU - MU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 14 | 125 | 7 | 146 | 4 | 23 | 16 | 43 | 22 | 117 | 16 | 155 | 11 | 34 | 8 | 53 | 397 |
| 04:15 PM | 14 | 128 | 6 | 148 | 6 | 31 | 19 | 56 | 19 | 119 | 19 | 157 | 15 | 51 | 15 | 81 | 442 |
| 04:30 PM | 13 | 138 | 5 | 156 | 3 | 27 | 20 | 50 | 18 | 122 | 9 | 149 | 14 | 48 | 17 | 79 | 434 |
| 04:45 PM | 21 | 130 | 7 | 158 | 3 | 44 | 24 | 71 | 13 | 95 | 12 | 120 | 14 | 43 | 19 | 76 | 425 |
| Total | 62 | 521 | 25 | 608 | 16 | 125 | 79 | 220 | 72 | 453 | 56 | 581 | 54 | 176 | 59 | 289 | 1698 |
| 05:00 PM | 21 | 116 | 10 | 147 | 6 | 25 | 18 | 49 | 15 | 99 | 11 | 125 | 24 | 46 | 17 | 87 | 408 |
| 05:15 PM | 13 | 130 | 4 | 147 | 8 | 37 | 24 | 69 | 20 | 104 | 21 | 145 | 68 | 44 | 13 | 125 | 486 |
| 05:30 PM | 11 | 157 | 8 | 176 | 4 | 31 | 18 | 53 | 22 | 100 | 16 | 138 | 21 | 53 | 17 | 91 | 458 |
| 05:45 PM | 9 | 134 | 5 | 148 | 4 | 36 | 24 | 64 | 14 | 106 | 16 | 136 | 23 | 55 | 20 | 98 | 446 |
| Total | 54 | 537 | 27 | 618 | 22 | 129 | 84 | 235 | 71 | 409 | 64 | 544 | 136 | 198 | 67 | 401 | 1798 |
| Grand Total | 116 | 1058 | 52 | 1226 | 38 | 254 | 163 | 455 | 143 | 862 | 120 | 1125 | 190 | 374 | 126 | 690 | 3496 |
| Apprch % | 9.5 | 86.3 | 4.2 | | 8.4 | 55.8 | 35.8 | | 12.7 | 76.6 | 10.7 | | 27.5 | 54.2 | 18.3 | | |
| Total % | 3.3 | 30.3 | 1.5 | 35.1 | 1.1 | 7.3 | 4.7 | 13 | 4.1 | 24.7 | 3.4 | 32.2 | 5.4 | 10.7 | 3.6 | 19.7 | |
| PC | 115 | 1027 | 42 | 1184 | 38 | 252 | 157 | 447 | 137 | 833 | 117 | 1087 | 188 | 371 | 125 | 684 | 3402 |
| % PC | 99.1 | 97.1 | 80.8 | 96.6 | 100 | 99.2 | 96.3 | 98.2 | 95.8 | 96.6 | 97.5 | 96.6 | 98.9 | 99.2 | 99.2 | 99.1 | 97.3 |
| SU | 1 | 25 | 10 | 36 | 0 | 2 | 4 | 6 | 3 | 24 | 2 | 29 | 2 | 3 | 1 | 6 | 77 |
| % SU | 0.9 | 2.4 | 19.2 | 2.9 | 0 | 0.8 | 2.5 | 1.3 | 2.1 | 2.8 | 1.7 | 2.6 | 1.1 | 0.8 | 0.8 | 0.9 | 2.2 |
| MU | 0 | 6 | 0 | 6 | 0 | 0 | 2 | 2 | 3 | 5 | 1 | 9 | 0 | 0 | 0 | 0 | 17 |
| % MU | 0 | 0.6 | 0 | 0.5 | 0 | 0 | 1.2 | 0.4 | 2.1 | 0.6 | 0.8 | 0.8 | 0 | 0 | 0 | 0 | 0.5 |

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|--|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 21 | 116 | 10 | 147 | 6 | 25 | 18 | 49 | 15 | 99 | 11 | 125 | 24 | 46 | 17 | 87 | 408 |
| 05:15 PM | 13 | 130 | 4 | 147 | 8 | 37 | 24 | 69 | 20 | 104 | 21 | 145 | 68 | 44 | 13 | 125 | 486 |
| 05:30 PM | 11 | 157 | 8 | 176 | 4 | 31 | 18 | 53 | 22 | 100 | 16 | 138 | 21 | 53 | 17 | 91 | 458 |
| 05:45 PM | 9 | 134 | 5 | 148 | 4 | 36 | 24 | 64 | 14 | 106 | 16 | 136 | 23 | 55 | 20 | 98 | 446 |
| Total Volume | 54 | 537 | 27 | 618 | 22 | 129 | 84 | 235 | 71 | 409 | 64 | 544 | 136 | 198 | 67 | 401 | 1798 |
| % App. Total | 8.7 | 86.9 | 4.4 | | 9.4 | 54.9 | 35.7 | | 13.1 | 75.2 | 11.8 | | 33.9 | 49.4 | 16.7 | | |
| PHF | .643 | .855 | .675 | .878 | .688 | .872 | .875 | .851 | .807 | .965 | .762 | .938 | .500 | .900 | .838 | .802 | .925 |

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Halsted St and Vermont Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 6

Groups Printed- SU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 15 |
| 04:15 PM | 0 | 3 | 2 | 5 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 4 | 0 | 1 | 0 | 1 | 11 |
| 04:30 PM | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 2 | 8 |
| 04:45 PM | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 7 |
| Total | 0 | 13 | 5 | 18 | 0 | 2 | 1 | 3 | 0 | 14 | 1 | 15 | 1 | 3 | 1 | 5 | 41 |
| 05:00 PM | 0 | 2 | 1 | 3 | 0 | 0 | 2 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 7 |
| 05:15 PM | 1 | 0 | 2 | 3 | 0 | 0 | 1 | 1 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 9 |
| 05:30 PM | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 12 |
| 05:45 PM | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 8 |
| Total | 1 | 12 | 5 | 18 | 0 | 0 | 3 | 3 | 3 | 10 | 1 | 14 | 1 | 0 | 0 | 1 | 36 |
| Grand Total | 1 | 25 | 10 | 36 | 0 | 2 | 4 | 6 | 3 | 24 | 2 | 29 | 2 | 3 | 1 | 6 | 77 |
| Apprch % | 2.8 | 69.4 | 27.8 | | 0 | 33.3 | 66.7 | | 10.3 | 82.8 | 6.9 | | 33.3 | 50 | 16.7 | | |
| Total % | 1.3 | 32.5 | 13 | 46.8 | 0 | 2.6 | 5.2 | 7.8 | 3.9 | 31.2 | 2.6 | 37.7 | 2.6 | 3.9 | 1.3 | 7.8 | |

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Halsted St and Vermont Ave

Chicago, IL

4:00 PM - 6:00 PM

Sunny, Dry

File Name : AM + PM

Site Code : 00000000

Start Date : 5/17/2012

Page No : 7

Groups Printed- MU

| | Halsted St From North | | | | Vermont Ave From East | | | | Halsted St From South | | | | Vermont Ave From West | | | | |
|-------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|--------------------------|------|------|------------|------------|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 6 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 04:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 6 | 0 | 0 | 0 | 0 | 9 |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 05:30 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05:45 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 8 |
| Grand Total | 0 | 6 | 0 | 6 | 0 | 0 | 2 | 2 | 3 | 5 | 1 | 9 | 0 | 0 | 0 | 0 | 17 |
| Apprch % | 0 | 100 | 0 | | 0 | 0 | 100 | | 33.3 | 55.6 | 11.1 | | 0 | 0 | 0 | | |
| Total % | 0 | 35.3 | 0 | 35.3 | 0 | 0 | 11.8 | 11.8 | 17.6 | 29.4 | 5.9 | 52.9 | 0 | 0 | 0 | 0 | |

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Halsted St and Vermont Ave
Chicago, IL
4:00 PM - 6:00 PM
Sunny, Dry

File Name : AM + PM Peds
Site Code : 00000000
Start Date : 5/17/2012
Page No : 8



















Groups Printed- Peds & Bikes

| | Halsted St Crossing North Leg | | | Vermont Ave Crossing East Leg | | | Halsted St Crossing South Leg | | | Vermont Ave Crossing West Leg | | | |
|-------------|----------------------------------|------|------------|----------------------------------|------|------------|----------------------------------|------|------------|----------------------------------|------|------------|------------|
| Start Time | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Bikes | Peds | App. Total | Int. Total |
| 04:00 PM | 0 | 3 | 3 | 1 | 2 | 3 | 0 | 2 | 2 | 0 | 6 | 6 | 14 |
| 04:15 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 7 | 7 | 13 |
| 04:30 PM | 0 | 2 | 2 | 1 | 11 | 12 | 0 | 8 | 8 | 0 | 2 | 2 | 24 |
| 04:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 11 | 11 | 0 | 0 | 0 | 12 |
| Total | 0 | 8 | 8 | 2 | 14 | 16 | 0 | 24 | 24 | 0 | 15 | 15 | 63 |
| 05:00 PM | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 1 | 2 | 8 |
| 05:15 PM | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 8 | 9 | 1 | 0 | 1 | 11 |
| 05:30 PM | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 9 | 9 | 0 | 1 | 1 | 13 |
| 05:45 PM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 3 | 3 | 2 | 3 | 5 | 1 | 20 | 21 | 2 | 2 | 4 | 33 |
| Grand Total | 0 | 11 | 11 | 4 | 17 | 21 | 1 | 44 | 45 | 2 | 17 | 19 | 96 |
| Apprch % | 0 | 100 | | 19 | 81 | | 2.2 | 97.8 | | 10.5 | 89.5 | | |
| Total % | 0 | 11.5 | 11.5 | 4.2 | 17.7 | 21.9 | 1 | 45.8 | 46.9 | 2.1 | 17.7 | 19.8 | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 36 | 765 | 16 | 21 | 707 | 43 | 43 | 60 | 75 | 38 | 29 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.92 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1412 | 2976 | | 1591 | 2978 | | | 1752 | | | 1663 | |
| Flt Permitted | 0.30 | 1.00 | | 0.29 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 448 | 2976 | | 481 | 2978 | | | 1600 | | | 1520 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 38 | 797 | 17 | 22 | 736 | 45 | 45 | 62 | 78 | 40 | 30 | 97 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 40 | 0 | 0 | 63 | 0 |
| Lane Group Flow (vph) | 38 | 812 | 0 | 22 | 774 | 0 | 0 | 145 | 0 | 0 | 104 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 234 | 1557 | | 252 | 1558 | | | 566 | | | 538 | |
| v/s Ratio Prot | c0.27 | | | 0.26 | | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.05 | | | | c0.09 | | | 0.07 | |
| v/c Ratio | 0.16 | 0.52 | | 0.09 | 0.50 | | | 0.26 | | | 0.19 | |
| Uniform Delay, d1 | 8.1 | 10.2 | | 7.7 | 10.0 | | | 14.9 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.75 | 1.01 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.5 | 1.3 | | 0.6 | 1.0 | | | 1.1 | | | 0.8 | |
| Delay (s) | 9.6 | 11.4 | | 6.5 | 11.1 | | | 16.0 | | | 15.4 | |
| Level of Service | A | B | | A | B | | | B | | | B | |
| Approach Delay (s) | 11.3 | | | 11.0 | | | 16.0 | | | 15.4 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 882 | 7 | 23 | 508 | 50 | 0 | 0 | 0 | 461 | 8 | 319 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.90 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 770 | 3284 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.45 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 363 | 3284 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 27 | 948 | 8 | 25 | 546 | 54 | 0 | 0 | 0 | 496 | 9 | 343 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 175 |
| Lane Group Flow (vph) | 27 | 955 | 0 | 25 | 546 | 30 | 0 | 0 | 0 | 496 | 9 | 168 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 164 | 1086 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.29 | | 0.01 | c0.17 | | | | | c0.16 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.12 |
| v/c Ratio | 0.16 | 0.88 | | 0.04 | 0.31 | 0.11 | | | | 0.69 | 0.03 | 0.52 |
| Uniform Delay, d1 | 31.4 | 41.1 | | 15.1 | 15.1 | 13.3 | | | | 45.8 | 38.7 | 43.7 |
| Progression Factor | 0.81 | 0.84 | | 0.33 | 0.64 | 1.54 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.9 | 9.3 | | 0.1 | 0.3 | 0.5 | | | | 5.5 | 0.2 | 5.9 |
| Delay (s) | 27.6 | 43.6 | | 5.0 | 10.0 | 21.0 | | | | 51.3 | 38.9 | 49.5 |
| Level of Service | C | D | | A | B | C | | | | D | D | D |
| Approach Delay (s) | | 43.2 | | | 10.8 | | | 0.0 | | | 50.4 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 48.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 438 | 786 | 119 | 21 | 428 | 253 | 124 | 489 | 59 | 41 | 0 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3106 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3106 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 466 | 836 | 127 | 22 | 455 | 269 | 132 | 520 | 63 | 44 | 0 | 31 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 170 | 0 | 0 | 25 | 0 | 0 | 29 |
| Lane Group Flow (vph) | 466 | 954 | 0 | 22 | 455 | 99 | 0 | 652 | 38 | 44 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1553 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.15 | c0.31 | | 0.01 | c0.16 | | | c0.20 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.11 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.44 | 0.61 | | 0.20 | 0.65 | 0.44 | | 0.86 | 0.12 | 0.83 | | 0.04 |
| Uniform Delay, d1 | 34.1 | 23.5 | | 57.1 | 44.6 | 42.1 | | 47.9 | 39.5 | 60.3 | | 57.4 |
| Progression Factor | 0.73 | 0.17 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.88 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.0 | | 4.2 | 4.7 | 6.2 | | 11.6 | 0.7 | 65.2 | | 0.4 |
| Delay (s) | 25.5 | 5.0 | | 61.3 | 49.4 | 48.3 | | 56.6 | 35.7 | 125.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 11.7 | | | 49.3 | | | 54.8 | | | 97.5 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.7 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 68.9% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 794 | 197 | 54 | 575 | 0 | 111 | 0 | 106 | 3 | 10 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.97 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1649 | 3005 | | 1390 | | 1465 | 1803 | 1930 | |
| Flt Permitted | | 1.00 | | 0.22 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 375 | 3005 | | 1097 | | 1465 | 1803 | 1930 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 827 | 205 | 56 | 599 | 0 | 116 | 0 | 110 | 3 | 10 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1010 | 0 | 56 | 599 | 0 | 116 | 0 | 35 | 3 | 11 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1716 | | 225 | 1803 | | 351 | | 469 | | 577 | 618 |
| v/s Ratio Prot | | c0.35 | | | 0.20 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.15 | | | c0.11 | | 0.02 | | 0.00 | |
| v/c Ratio | | 0.59 | | 0.25 | 0.33 | | 0.33 | | 0.08 | | 0.01 | 0.02 |
| Uniform Delay, d1 | | 12.4 | | 9.4 | 10.0 | | 25.9 | | 23.7 | | 23.2 | 23.2 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 2.6 | 0.5 | | 2.5 | | 0.3 | | 0.0 | 0.1 |
| Delay (s) | | 13.9 | | 12.0 | 10.5 | | 28.4 | | 24.0 | | 23.2 | 23.3 |
| Level of Service | | B | | B | B | | C | | C | | C | C |
| Approach Delay (s) | | 13.9 | | | 10.6 | | | 26.2 | | | | 23.3 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.8% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street








1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↱↱↱ | | | ↱↱↱ | |
| Volume (vph) | 0 | 0 | 0 | 316 | 39 | 1032 | 190 | 855 | 0 | 0 | 396 | 678 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.97 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3922 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3922 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 0 | 0 | 0 | 326 | 40 | 1064 | 196 | 881 | 0 | 0 | 408 | 699 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 326 | 40 | 1064 | 196 | 881 | 0 | 0 | 1107 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1158 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.20 | | | c0.28 | |
| v/s Ratio Perm | | | | 0.21 | 0.02 | c0.72 | | | | | | |
| v/c Ratio | | | | 0.72 | 0.08 | 2.52 | 0.42 | 0.32 | | | 1.74dr | |
| Uniform Delay, d1 | | | | 33.2 | 26.7 | 37.5 | 29.1 | 9.1 | | | 36.3 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.64 | 2.30 | | | 1.00 | |
| Incremental Delay, d2 | | | | 9.7 | 0.3 | 688.9 | 2.0 | 0.2 | | | 17.8 | |
| Delay (s) | | | | 42.9 | 27.1 | 726.4 | 20.6 | 21.1 | | | 54.1 | |
| Level of Service | | | | D | C | F | C | C | | | D | |
| Approach Delay (s) | | 0.0 | | | 551.0 | | | 21.0 | | | 54.1 | |
| Approach LOS | | A | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 240.9 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.27 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 92.6% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|------|------|----------------------|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 277 | 867 | 87 | 0 | 0 | 0 | 0 | 768 | 570 | 257 | 455 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 292 | 913 | 92 | 0 | 0 | 0 | 0 | 808 | 600 | 271 | 479 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 263 | 1027 | 0 | 0 | 0 | 0 | 0 | 808 | 600 | 271 | 479 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1032 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.18 | | c0.17 | 0.10 | |
| v/s Ratio Perm | 0.18 | 0.32 | | | | | | | c0.27 | | | |
| v/c Ratio | 0.54 | 1.00 | | | | | | 0.69 | 1.03 | 0.58 | 0.18 | |
| Uniform Delay, d1 | 29.1 | 35.4 | | | | | | 34.6 | 38.5 | 31.5 | 9.8 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.45 | 0.47 | 1.06 | 0.44 | |
| Incremental Delay, d2 | 4.3 | 26.9 | | | | | | 0.3 | 19.7 | 2.7 | 0.1 | |
| Delay (s) | 33.4 | 62.4 | | | | | | 15.8 | 37.9 | 36.2 | 4.4 | |
| Level of Service | C | E | | | | | | B | D | D | A | |
| Approach Delay (s) | | 56.5 | | | 0.0 | | | 25.2 | | | 15.9 | |
| Approach LOS | | E | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.9 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 92.6% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|-------|-------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | | ↰ | ↱ | | | ↱ | |
| Volume (vph) | 0 | 0 | 0 | 216 | 4 | 21 | 3 | 152 | 0 | 0 | 99 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1956 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.60 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 812 | 1882 | | | 1956 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 227 | 4 | 22 | 3 | 160 | 0 | 0 | 104 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 227 | 8 | 0 | 3 | 160 | 0 | 0 | 106 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | | pm+pt | | | | |
| Protected Phases | | | | | 8 | | | 7 | 2 | | 6 | |
| Permitted Phases | | | | 8 | | | | 2 | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | | 0.59 | 0.59 | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | | 4.0 | 4.0 | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | | 517 | 1107 | | 1059 | |
| v/s Ratio Prot | | | | | 0.00 | | | 0.00 | c0.09 | | 0.05 | |
| v/s Ratio Perm | | | | c0.14 | | | | 0.00 | | | | |
| v/c Ratio | | | | 0.45 | 0.01 | | | 0.01 | 0.14 | | 0.10 | |
| Uniform Delay, d1 | | | | 23.1 | 19.8 | | | 9.7 | 7.9 | | 9.5 | |
| Progression Factor | | | | 1.00 | 1.00 | | | 1.01 | 1.18 | | 1.00 | |
| Incremental Delay, d2 | | | | 2.9 | 0.0 | | | 0.0 | 0.3 | | 0.2 | |
| Delay (s) | | | | 26.1 | 19.9 | | | 9.8 | 9.5 | | 9.6 | |
| Level of Service | | | | C | B | | | A | A | | A | |
| Approach Delay (s) | | 0.0 | | | 25.4 | | | 9.5 | | | 9.6 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |




















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 3 | 0 | 18 | 0 | 129 | 37 | 33 | 282 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.88 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1577 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.99 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1513 | 1809 | | | 1564 | | | 1686 | | 1012 | 1755 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 9 | 6 | 6 | 3 | 0 | 21 | 0 | 148 | 43 | 38 | 324 | 0 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 14 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 9 | 8 | 0 | 0 | 10 | 0 | 0 | 179 | 0 | 38 | 324 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 481 | 575 | | | 497 | | | 793 | | 643 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.02 | | | 0.23 | | 0.06 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 19.9 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.92 | 0.83 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.8 | |
| Delay (s) | 20.0 | 19.9 | | | 20.0 | | | 14.0 | | 8.0 | 8.1 | |
| Level of Service | B | B | | | B | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.0 | | | 14.0 | | | 8.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) AM Peak
WRH





Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 61 | 14 | 10 | 334 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.98 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1791 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.63 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1791 | | 1164 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Adj. Flow (vph) | 75 | 17 | 12 | 412 | 196 | 15 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 80 | 0 | 12 | 412 | 207 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 579 | | 645 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.23 | 0.13 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.14 | | 0.02 | 0.42 | 0.23 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.4 | 7.4 | |
| Progression Factor | 1.00 | | 0.31 | 0.55 | 1.17 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.2 | 0.6 | |
| Delay (s) | 16.1 | | 2.1 | 5.9 | 9.2 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.1 | | | 5.8 | 9.2 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 8.1 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.32 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 38.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↕↕ | | ↗ | ↖ | | | ↖ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 19 | 239 | 13 | 494 | 219 | 0 | 0 | 162 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3739 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.62 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3739 | | 1081 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 20 | 252 | 14 | 520 | 231 | 0 | 0 | 171 | 33 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 282 | 0 | 520 | 231 | 0 | 0 | 171 | 15 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1144 | | 717 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.08 | | c0.09 | 0.13 | | | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.35 | | | | | 0.01 |
| v/c Ratio | | | | | 0.25 | | 0.73 | 0.22 | | | 0.24 | 0.03 |
| Uniform Delay, d1 | | | | | 22.1 | | 14.0 | 7.8 | | | 14.5 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.5 | | 6.3 | 0.5 | | | 0.8 | 0.1 |
| Delay (s) | | | | | 22.7 | | 20.3 | 8.3 | | | 15.3 | 13.2 |
| Level of Service | | | | | C | | C | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 22.7 | | | 16.6 | | | 15.0 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.56 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.9% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

1/14/2013

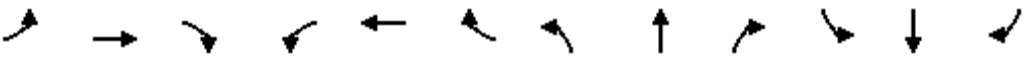
| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 10 | 9 | 7 | 255 | 405 | 74 | 58 | 264 | 10 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1798 | | 1691 | 3237 | | 1705 | 3351 | |
| Flt Permitted | | | | | 0.98 | | 0.55 | 1.00 | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | | | | 1798 | | 982 | 3237 | | 696 | 3351 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 12 | 11 | 8 | 300 | 476 | 87 | 68 | 311 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 25 | 0 | 300 | 543 | 0 | 68 | 319 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 551 | | 603 | 1467 | | 475 | 1519 | |
| v/s Ratio Prot | | | | | c0.01 | | c0.05 | 0.17 | | 0.01 | 0.10 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | 0.06 | | |
| v/c Ratio | | | | | 0.05 | | 0.50 | 0.37 | | 0.14 | 0.21 | |
| Uniform Delay, d1 | | | | | 18.3 | | 11.2 | 13.5 | | 10.6 | 12.4 | |
| Progression Factor | | | | | 1.00 | | 0.74 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 2.8 | 0.7 | | 0.6 | 0.3 | |
| Delay (s) | | | | | 18.4 | | 11.1 | 10.6 | | 11.2 | 12.7 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.4 | | | 10.8 | | | 12.4 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 51.6% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↔ | ↕ | | ↔ | ↕ | |
| Volume (vph) | 44 | 42 | 17 | 8 | 130 | 171 | 16 | 519 | 9 | 54 | 208 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1948 | | | 1626 | | 1596 | 3233 | | 1641 | 3131 | |
| Flt Permitted | | 0.77 | | | 0.99 | | 0.60 | 1.00 | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 1527 | | | 1619 | | 1000 | 3233 | | 675 | 3131 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 51 | 48 | 20 | 9 | 149 | 197 | 18 | 597 | 10 | 62 | 239 | 14 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 60 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 109 | 0 | 0 | 295 | 0 | 18 | 605 | 0 | 62 | 247 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 509 | | | 540 | | 560 | 1810 | | 378 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.19 | | | 0.08 | |
| v/s Ratio Perm | | 0.07 | | | c0.18 | | 0.02 | | | 0.09 | | |
| v/c Ratio | | 0.21 | | | 0.55 | | 0.03 | 0.33 | | 0.16 | 0.14 | |
| Uniform Delay, d1 | | 17.9 | | | 20.4 | | 7.4 | 8.9 | | 8.0 | 7.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.14 | 0.06 | |
| Incremental Delay, d2 | | 1.0 | | | 3.9 | | 0.1 | 0.5 | | 0.9 | 0.2 | |
| Delay (s) | | 18.9 | | | 24.3 | | 7.5 | 9.4 | | 2.0 | 0.6 | |
| Level of Service | | B | | | C | | A | A | | A | A | |
| Approach Delay (s) | | 18.9 | | | 24.3 | | | 9.4 | | | 0.9 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.9% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 35 | 44 | 81 | 250 | 173 | 18 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 38 | 47 | 87 | 269 | 186 | 19 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 85 | 177 | 179 | 124 | 81 | |
| Volume Left (vph) | 38 | 87 | 0 | 0 | 0 | |
| Volume Right (vph) | 47 | 0 | 0 | 0 | 19 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.08 | -0.08 | |
| Departure Headway (s) | 5.0 | 5.2 | 5.0 | 5.1 | 5.0 | |
| Degree Utilization, x | 0.12 | 0.26 | 0.25 | 0.18 | 0.11 | |
| Capacity (veh/h) | 665 | 671 | 703 | 676 | 700 | |
| Control Delay (s) | 8.6 | 8.9 | 8.4 | 8.1 | 7.4 | |
| Approach Delay (s) | 8.6 | 8.6 | | 7.8 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 8.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 30.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 40 | 46 | 277 | 12 | 5 | 477 | 37 | 39 | 37 | 47 | 632 | 37 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3292 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.57 | 1.00 | 1.00 | | | 0.47 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 1022 | 1731 | 1487 | | | 851 | 3292 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 46 | 53 | 318 | 14 | 6 | 548 | 43 | 45 | 43 | 54 | 726 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 99 | 318 | 7 | 6 | 548 | 57 | 0 | 0 | 97 | 765 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 311 | 528 | 453 | | | 203 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.18 | | | c0.32 | | | | | c0.23 | |
| v/s Ratio Perm | | 0.12 | | 0.00 | 0.01 | | 0.04 | | | 0.11 | | |
| v/c Ratio | | 0.35 | 0.39 | 0.01 | 0.02 | 1.04 | 0.13 | | | 0.48 | 0.98 | |
| Uniform Delay, d1 | | 20.4 | 17.6 | 14.5 | 25.5 | 36.5 | 26.4 | | | 34.4 | 39.7 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.4 | 1.4 | 0.0 | 0.1 | 49.3 | 0.6 | | | 7.9 | 26.8 | |
| Delay (s) | | 23.8 | 19.0 | 14.5 | 25.6 | 85.8 | 27.0 | | | 42.2 | 66.5 | |
| Level of Service | | C | B | B | C | F | C | | | D | E | |
| Approach Delay (s) | | | 20.0 | | | 77.2 | | | | | 63.8 | |
| Approach LOS | | | B | | | E | | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 54.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 75.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 33 | 231 | 21 | 26 | 4 | 47 | 97 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3279 | | | | 1710 | 2622 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2622 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 38 | 266 | 24 | 30 | 5 | 54 | 111 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 38 | 312 | 0 | 0 | 0 | 59 | 117 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.10 | | | | 0.03 | | |
| v/s Ratio Perm | 0.13 | | | | | | c0.04 | |
| v/c Ratio | 0.56 | 0.41 | | | | 0.21 | 0.27 | |
| Uniform Delay, d1 | 35.5 | 34.1 | | | | 37.8 | 38.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 29.2 | 1.6 | | | | 1.6 | 1.5 | |
| Delay (s) | 64.7 | 35.7 | | | | 39.4 | 39.6 | |
| Level of Service | E | D | | | | D | D | |
| Approach Delay (s) | | 38.8 | | | | 39.6 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 20 | 374 | 0 | 0 | 452 | 24 | 106 | 104 | 102 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1772 | | | | |
| Flt Permitted | | 0.97 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1603 | | | 1930 | | | 1772 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 22 | 402 | 0 | 0 | 486 | 26 | 114 | 112 | 110 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 424 | 0 | 0 | 512 | 0 | 0 | 336 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 765 | | | 920 | | | 709 | | | | |
| v/s Ratio Prot | | | | | c0.27 | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | | | | 0.19 | | | | |
| v/c Ratio | | 0.55 | | | 0.56 | | | 0.47 | | | | |
| Uniform Delay, d1 | | 12.1 | | | 12.1 | | | 14.4 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.9 | | | 2.4 | | | 2.3 | | | | |
| Delay (s) | | 15.0 | | | 14.5 | | | 16.7 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 15.0 | | | 14.5 | | | 16.7 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.52 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.2% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 96 | 285 | 95 | 63 | 258 | 106 | 125 | 1435 | 108 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1920 | 1426 | | 1922 | 1396 | 1501 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.69 | 1.00 | | 0.72 | 1.00 | 0.39 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1342 | 1426 | | 1404 | 1396 | 617 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 103 | 306 | 102 | 68 | 277 | 114 | 134 | 1543 | 116 | 70 | 478 | 100 |
| RTOR Reduction (vph) | 0 | 0 | 60 | 0 | 0 | 67 | 0 | 0 | 29 | 0 | 0 | 60 |
| Lane Group Flow (vph) | 0 | 409 | 42 | 0 | 345 | 47 | 134 | 1543 | 87 | 70 | 478 | 40 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.4 | 44.4 | 49.0 | 42.4 | 42.4 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.4 | 44.4 | 49.0 | 42.4 | 42.4 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 550 | 584 | | 575 | 572 | 384 | 1310 | 543 | 147 | 1194 | 511 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.50 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.30 | 0.03 | | 0.25 | 0.03 | 0.15 | | 0.07 | 0.19 | | 0.03 |
| v/c Ratio | | 0.74 | 0.07 | | 0.60 | 0.08 | 0.35 | 1.18 | 0.16 | 0.48 | 0.40 | 0.08 |
| Uniform Delay, d1 | | 26.3 | 18.9 | | 24.3 | 18.9 | 14.5 | 30.3 | 18.8 | 23.1 | 22.3 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.07 | 0.82 | 0.55 |
| Incremental Delay, d2 | | 5.4 | 0.2 | | 4.6 | 0.3 | 0.6 | 88.3 | 0.6 | 2.4 | 1.0 | 0.3 |
| Delay (s) | | 31.7 | 19.1 | | 28.8 | 19.2 | 15.1 | 118.6 | 19.4 | 27.0 | 19.3 | 10.8 |
| Level of Service | | C | B | | C | B | B | F | B | C | B | B |
| Approach Delay (s) | | 29.2 | | | 26.5 | | | 104.4 | | | 18.8 | |
| Approach LOS | | C | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 66.4 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.93 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 98.5% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|------|----------------------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | | |
| Volume (vph) | 46 | 366 | 46 | 41 | 323 | 41 | 52 | 48 | 43 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1626 | | | 1777 | | | | |
| Flt Permitted | | 0.93 | | | 0.93 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1524 | | | 1516 | | | 1777 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 49 | 394 | 49 | 44 | 347 | 44 | 56 | 52 | 46 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 23 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 486 | 0 | 0 | 429 | 0 | 0 | 131 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 891 | | | 886 | | | 519 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.32 | | | 0.28 | | | 0.07 | | | | |
| v/c Ratio | | 0.55 | | | 0.48 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 8.2 | | | 7.8 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.4 | | | 1.9 | | | 1.2 | | | | |
| Delay (s) | | 10.6 | | | 9.7 | | | 18.7 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.6 | | | 9.7 | | | 18.7 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 49.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 18 | 383 | 50 | 27 | 338 | 33 | 41 | 133 | 79 | 49 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1634 | 1288 | | 1663 | 1490 | | 1776 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.96 | 1.00 | | 0.89 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1624 | 1255 | | 1572 | 1288 | | 1505 | 1490 | | 1642 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 19 | 403 | 53 | 28 | 356 | 35 | 43 | 140 | 83 | 52 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 56 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 422 | 30 | 0 | 384 | 20 | 0 | 183 | 27 | 0 | 276 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 931 | 720 | | 901 | 738 | | 482 | 477 | | 525 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.26 | 0.02 | | 0.24 | 0.02 | | 0.12 | 0.02 | | c0.17 | |
| v/c Ratio | | 0.45 | 0.04 | | 0.43 | 0.03 | | 0.38 | 0.06 | | 0.52 | |
| Uniform Delay, d1 | | 9.2 | 7.0 | | 9.0 | 6.9 | | 19.7 | 17.7 | | 20.8 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.6 | 0.1 | | 1.5 | 0.1 | | 2.3 | 0.2 | | 3.7 | |
| Delay (s) | | 10.8 | 7.1 | | 10.5 | 7.0 | | 22.0 | 17.9 | | 24.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 10.4 | | | 10.2 | | | 20.7 | | | 24.6 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 81.3% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 72 | 364 | 25 | 15 | 244 | 34 | 51 | 298 | 38 | 38 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1461 | 2989 | | 1458 | 3528 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.57 | 1.00 | | 0.50 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.47 | 1.00 | 1.00 |
| Satd. Flow (perm) | 878 | 2989 | | 765 | 3528 | | 1120 | 1647 | 1301 | 756 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 77 | 387 | 27 | 16 | 260 | 36 | 54 | 317 | 40 | 40 | 98 | 10 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 17 | 0 | 0 | 0 | 22 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 77 | 406 | 0 | 16 | 279 | 0 | 54 | 317 | 18 | 40 | 98 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 419 | 1426 | | 365 | 1683 | | 448 | 659 | 520 | 302 | 616 | 462 |
| v/s Ratio Prot | | c0.14 | | | 0.08 | | | c0.19 | | | 0.06 | |
| v/s Ratio Perm | 0.09 | | | 0.02 | | | 0.05 | | 0.01 | 0.05 | | 0.00 |
| v/c Ratio | 0.18 | 0.28 | | 0.04 | 0.17 | | 0.12 | 0.48 | 0.03 | 0.13 | 0.16 | 0.01 |
| Uniform Delay, d1 | 9.7 | 10.3 | | 9.1 | 9.7 | | 12.3 | 14.5 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.77 | 0.87 | 0.57 | 0.51 | 0.50 | 0.26 |
| Incremental Delay, d2 | 1.0 | 0.5 | | 0.2 | 0.2 | | 0.5 | 2.5 | 0.1 | 0.9 | 0.5 | 0.0 |
| Delay (s) | 10.7 | 10.8 | | 9.3 | 9.9 | | 10.0 | 15.1 | 6.9 | 7.1 | 6.9 | 3.1 |
| Level of Service | B | B | | A | A | | B | B | A | A | A | A |
| Approach Delay (s) | | 10.8 | | | 9.8 | | | 13.6 | | | 6.7 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 50.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 78 | 330 | 67 | 40 | 239 | 59 | 56 | 320 | 38 | 50 | 124 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1459 | 3058 | | 1587 | 3000 | | 1540 | 3022 | | 1397 | 2790 | |
| Flt Permitted | 0.56 | 1.00 | | 0.49 | 1.00 | | 0.64 | 1.00 | | 0.51 | 1.00 | |
| Satd. Flow (perm) | 868 | 3058 | | 824 | 3000 | | 1044 | 3022 | | 749 | 2790 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 80 | 340 | 69 | 41 | 246 | 61 | 58 | 330 | 39 | 52 | 128 | 42 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 80 | 409 | 0 | 41 | 307 | 0 | 58 | 357 | 0 | 52 | 145 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 417 | 1468 | | 396 | 1440 | | 432 | 1249 | | 310 | 1153 | |
| v/s Ratio Prot | c0.13 | | | 0.10 | | | c0.12 | | | 0.05 | | |
| v/s Ratio Perm | 0.09 | | | 0.05 | | | 0.06 | | | 0.07 | | |
| v/c Ratio | 0.19 | 0.28 | | 0.10 | 0.21 | | 0.13 | 0.29 | | 0.17 | 0.13 | |
| Uniform Delay, d1 | 11.2 | 11.7 | | 10.7 | 11.3 | | 13.7 | 14.6 | | 13.9 | 13.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.5 | | 0.5 | 0.3 | | 0.6 | 0.6 | | 1.2 | 0.2 | |
| Delay (s) | 12.2 | 12.2 | | 11.2 | 11.6 | | 14.3 | 15.2 | | 15.0 | 13.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.2 | | | 11.6 | | | 15.1 | | | 14.1 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 47.9% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 84 | 252 | 29 | 21 | 292 | 43 | 54 | 344 | 22 | 34 | 161 | 36 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1575 | | 1470 | 1840 | | 1532 | 3072 | | 1371 | 2892 | |
| Flt Permitted | 0.49 | 1.00 | | 0.55 | 1.00 | | 0.62 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 787 | 1575 | | 852 | 1840 | | 1003 | 3072 | | 711 | 2892 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 88 | 265 | 31 | 22 | 307 | 45 | 57 | 362 | 23 | 36 | 169 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 88 | 296 | 0 | 22 | 352 | 0 | 57 | 385 | 0 | 36 | 207 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 481 | 737 | | 421 | 792 | | 345 | 730 | | 221 | 633 | |
| v/s Ratio Prot | c0.01 | 0.19 | | 0.00 | c0.19 | | c0.01 | c0.13 | | 0.01 | 0.07 | |
| v/s Ratio Perm | 0.09 | | | 0.02 | | | 0.04 | | | 0.04 | | |
| v/c Ratio | 0.18 | 0.40 | | 0.05 | 0.44 | | 0.17 | 0.53 | | 0.16 | 0.33 | |
| Uniform Delay, d1 | 11.9 | 14.8 | | 12.9 | 17.0 | | 21.1 | 28.2 | | 24.2 | 27.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 1.6 | | 0.1 | 1.8 | | 0.2 | 2.7 | | 0.3 | 1.4 | |
| Delay (s) | 12.1 | 16.4 | | 13.0 | 18.8 | | 21.4 | 31.0 | | 24.6 | 29.3 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 15.4 | | | 18.5 | | | 29.7 | | | 28.6 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 59.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

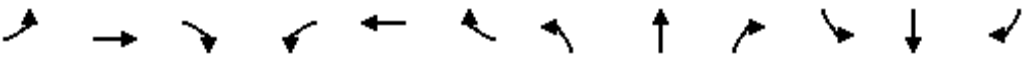
Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 53 | 247 | 34 | 54 | 312 | 95 | 44 | 300 | 97 | 51 | 146 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3492 | | | 2910 | | 1614 | 3156 | | 1577 | 2926 | |
| Flt Permitted | | 0.82 | | | 0.87 | | 0.63 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | | 2902 | | | 2546 | | 1073 | 3156 | | 785 | 2926 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 57 | 266 | 37 | 58 | 335 | 102 | 47 | 323 | 104 | 55 | 157 | 34 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 360 | 0 | 0 | 495 | 0 | 47 | 427 | 0 | 55 | 191 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1316 | | | 1154 | | 472 | 1389 | | 345 | 1287 | |
| v/s Ratio Prot | | | | | | | | c0.14 | | | 0.07 | |
| v/s Ratio Perm | | 0.12 | | | c0.19 | | 0.04 | | | 0.07 | | |
| v/c Ratio | | 0.27 | | | 0.43 | | 0.10 | 0.31 | | 0.16 | 0.15 | |
| Uniform Delay, d1 | | 12.8 | | | 13.9 | | 12.3 | 13.6 | | 12.6 | 12.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.5 | | | 1.2 | | 0.4 | 0.6 | | 1.0 | 0.2 | |
| Delay (s) | | 13.3 | | | 15.1 | | 12.7 | 14.2 | | 13.6 | 12.8 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 13.3 | | | 15.1 | | | 14.0 | | | 13.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |




















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 112 | 401 | 4 | 12 | 536 | 317 | 56 | 7 | 16 | 91 | 1 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3106 | |
| Flt Permitted | 0.43 | 1.00 | | 0.50 | 1.00 | 1.00 | | 0.72 | | | 0.78 | |
| Satd. Flow (perm) | 721 | 3144 | | 856 | 3257 | 1457 | | 1197 | | | 2522 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 120 | 431 | 4 | 13 | 576 | 341 | 60 | 8 | 17 | 98 | 1 | 43 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 102 | 0 | 14 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 120 | 434 | 0 | 13 | 576 | 239 | 0 | 71 | 0 | 0 | 107 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.9 | 46.9 | | 46.9 | 46.9 | 46.9 | | 11.9 | | | 11.9 | |
| Effective Green, g (s) | 46.9 | 46.9 | | 46.9 | 46.9 | 46.9 | | 11.9 | | | 11.9 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | 0.70 | | 0.18 | | | 0.18 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 506 | 2207 | | 601 | 2287 | 1023 | | 213 | | | 449 | |
| v/s Ratio Prot | 0.14 | | | c0.18 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.02 | | 0.16 | | c0.06 | | | 0.04 | |
| v/c Ratio | 0.24 | 0.20 | | 0.02 | 0.25 | 0.23 | | 0.33 | | | 0.24 | |
| Uniform Delay, d1 | 3.6 | 3.4 | | 3.0 | 3.6 | 3.5 | | 24.0 | | | 23.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 0.2 | | 0.1 | 0.3 | 0.5 | | 3.9 | | | 1.2 | |
| Delay (s) | 4.7 | 3.6 | | 3.1 | 3.9 | 4.1 | | 27.9 | | | 24.7 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 3.9 | | | 3.9 | | | | 27.9 | | | 24.7 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 6.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.27 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 66.8 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 49.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 67 | 63 | 190 | 66 | 106 | 1591 | 71 | 67 | 476 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1505 | | 1547 | 1589 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.34 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 625 | 1505 | | 547 | 1589 | | 636 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 71 | 66 | 200 | 69 | 112 | 1675 | 75 | 71 | 501 | 41 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 18 | 0 | 0 | 24 |
| Lane Group Flow (vph) | 117 | 283 | 0 | 66 | 254 | 0 | 112 | 1675 | 57 | 71 | 501 | 17 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 256 | 390 | | 238 | 411 | | 360 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.02 | c0.55 | | c0.03 | 0.17 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.12 | | 0.04 | 0.16 | | 0.01 |
| v/c Ratio | 0.46 | 0.72 | | 0.28 | 0.62 | | 0.31 | 1.33 | 0.11 | 0.41 | 0.41 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.7 | | 21.8 | 27.8 | | 13.0 | 25.0 | 15.4 | 18.1 | 17.7 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.69 | 0.46 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 11.1 | | 2.9 | 6.8 | | 2.0 | 151.4 | 0.4 | 6.9 | 1.0 | 0.1 |
| Delay (s) | 28.3 | 39.9 | | 24.7 | 34.6 | | 10.1 | 168.6 | 7.4 | 25.0 | 18.7 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 36.6 | | | 32.7 | | | 152.6 | | | 19.2 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 99.9 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.98 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 85.1% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 212 | 15 | 15 | 149 | 9 | 16 | 146 | 24 | 28 | 130 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1851 | | | 1846 | | | 1901 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1791 | | | 1795 | | | 1860 | | | 1835 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 28 | 226 | 16 | 16 | 159 | 10 | 17 | 155 | 26 | 30 | 138 | 20 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 9 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 266 | 0 | 0 | 182 | 0 | 0 | 189 | 0 | 0 | 182 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 744 | | | 746 | | | 858 | | | 847 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.10 | | | 0.10 | |
| v/c Ratio | | 0.36 | | | 0.24 | | | 0.22 | | | 0.21 | |
| Uniform Delay, d1 | | 13.0 | | | 12.4 | | | 10.5 | | | 10.5 | |
| Progression Factor | | 1.00 | | | 0.55 | | | 1.07 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.8 | | | 0.6 | | | 0.6 | |
| Delay (s) | | 14.4 | | | 7.6 | | | 11.8 | | | 11.0 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.4 | | | 7.6 | | | 11.8 | | | 11.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 42.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 25 | 9 | 162 | 16 | 33 | 296 | 26 | 15 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3013 | | 1302 | 3048 | | 1529 | 3092 | | 1492 | 2867 | |
| Flt Permitted | 0.63 | 1.00 | | 0.61 | 1.00 | | 0.68 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 969 | 3013 | | 837 | 3048 | | 1094 | 3092 | | 848 | 2867 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 26 | 199 | 27 | 10 | 178 | 18 | 36 | 325 | 29 | 16 | 95 | 19 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 12 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 26 | 210 | 0 | 10 | 184 | 0 | 36 | 344 | 0 | 16 | 106 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 283 | 881 | | 245 | 891 | | 640 | 1808 | | 496 | 1676 | |
| v/s Ratio Prot | | c0.07 | | | 0.06 | | | c0.11 | | | 0.04 | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.03 | | | 0.02 | | |
| v/c Ratio | 0.09 | 0.24 | | 0.04 | 0.21 | | 0.06 | 0.19 | | 0.03 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.8 | 6.3 | | 5.7 | 5.8 | |
| Progression Factor | 0.69 | 0.70 | | 0.77 | 0.76 | | 0.92 | 0.93 | | 0.47 | 0.43 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.2 | | 0.1 | 0.1 | |
| Delay (s) | 12.2 | 12.9 | | 13.1 | 13.7 | | 5.5 | 6.1 | | 2.8 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.8 | | | 13.7 | | | 6.1 | | | 2.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 31 | 16 | 122 | 29 | 27 | 414 | 24 | 11 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 2960 | | 1514 | 2884 | | | 1878 | | | 1806 | |
| Flt Permitted | 0.65 | 1.00 | | 0.62 | 1.00 | | | 0.98 | | | 0.97 | |
| Satd. Flow (perm) | 1071 | 2960 | | 985 | 2884 | | | 1843 | | | 1763 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 47 | 182 | 32 | 16 | 124 | 30 | 28 | 422 | 24 | 11 | 166 | 15 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 18 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 47 | 195 | 0 | 16 | 136 | 0 | 0 | 471 | 0 | 0 | 187 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 428 | 1184 | | 394 | 1154 | | | 879 | | | 841 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.04 | | | 0.02 | | | | c0.26 | | | 0.11 | |
| v/c Ratio | 0.11 | 0.16 | | 0.04 | 0.12 | | | 0.54 | | | 0.22 | |
| Uniform Delay, d1 | 12.2 | 12.5 | | 11.9 | 12.3 | | | 11.9 | | | 9.9 | |
| Progression Factor | 1.00 | 0.90 | | 0.87 | 0.88 | | | 1.06 | | | 1.00 | |
| Incremental Delay, d2 | 0.5 | 0.3 | | 0.2 | 0.2 | | | 2.3 | | | 0.6 | |
| Delay (s) | 12.8 | 11.6 | | 10.6 | 11.0 | | | 14.9 | | | 10.6 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 11.8 | | | 11.0 | | | 14.9 | | | 10.6 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.8 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 60.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 70 | 99 | 40 | 2 | 65 | 26 | 19 | 262 | 9 | 5 | 142 | 23 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1889 | | 1586 | 1873 | | | 1971 | | | 1931 | |
| Flt Permitted | 0.69 | 1.00 | | 0.64 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1163 | 1889 | | 1068 | 1873 | | | 1935 | | | 1918 | |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Adj. Flow (vph) | 81 | 115 | 47 | 2 | 76 | 30 | 22 | 305 | 10 | 6 | 165 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 81 | 162 | 0 | 2 | 106 | 0 | 0 | 337 | 0 | 0 | 198 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 358 | 581 | | 329 | 576 | | | 1101 | | | 1092 | |
| v/s Ratio Prot | c0.09 | | | 0.06 | | | | | | | | |
| v/s Ratio Perm | 0.07 | | | 0.00 | | | | c0.17 | | | 0.10 | |
| v/c Ratio | 0.23 | 0.28 | | 0.01 | 0.18 | | | 0.31 | | | 0.18 | |
| Uniform Delay, d1 | 16.7 | 17.0 | | 15.6 | 16.5 | | | 7.3 | | | 6.7 | |
| Progression Factor | 0.85 | 0.83 | | 0.92 | 0.90 | | | 0.91 | | | 1.00 | |
| Incremental Delay, d2 | 1.4 | 1.2 | | 0.0 | 0.7 | | | 0.7 | | | 0.4 | |
| Delay (s) | 15.6 | 15.3 | | 14.4 | 15.6 | | | 7.3 | | | 7.1 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 15.4 | | | 15.6 | | | 7.3 | | | 7.1 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 44.2% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 94 | 7 | 40 | 1 | 3 | 8 | 30 | 379 | 5 | 2 | 155 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.89 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1674 | | 1710 | 1401 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.72 | 1.00 | | 0.65 | 1.00 | 1.00 | 0.46 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1265 | 1674 | | 1300 | 1401 | | 1014 | 1631 | 1392 | 793 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 107 | 8 | 45 | 1 | 3 | 9 | 34 | 431 | 6 | 2 | 176 | 44 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 7 | 0 | 0 | 0 | 2 | 0 | 0 | 18 |
| Lane Group Flow (vph) | 107 | 20 | 0 | 1 | 5 | 0 | 34 | 431 | 4 | 2 | 176 | 26 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 350 | 464 | | 360 | 388 | | 608 | 979 | 835 | 476 | 1144 | 856 |
| v/s Ratio Prot | | 0.01 | | | 0.00 | | | c0.26 | | | 0.09 | |
| v/s Ratio Perm | c0.08 | | | 0.00 | | | 0.03 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.31 | 0.04 | | 0.00 | 0.01 | | 0.06 | 0.44 | 0.00 | 0.00 | 0.15 | 0.03 |
| Uniform Delay, d1 | 18.6 | 17.2 | | 17.0 | 17.1 | | 5.4 | 7.1 | 5.2 | 5.2 | 5.7 | 5.3 |
| Progression Factor | 1.52 | 2.41 | | 1.00 | 1.00 | | 0.90 | 0.91 | 0.89 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.3 | 0.0 | 0.0 | 0.3 | 0.1 |
| Delay (s) | 30.5 | 41.6 | | 17.0 | 17.1 | | 5.0 | 7.7 | 4.6 | 5.2 | 6.0 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 34.1 | | | 17.1 | | | 7.5 | | | 5.9 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 232 | 76 | 101 | 313 | 0 | 0 | 0 | 0 | 71 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 0.99 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2823 | | 1620 | 3288 | | | | | 1574 | 2906 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2823 | | 855 | 3288 | | | | | 1574 | 2906 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 0 | 247 | 81 | 107 | 333 | 0 | 0 | 0 | 0 | 76 | 324 | 384 |
| RTOR Reduction (vph) | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 216 | 0 |
| Lane Group Flow (vph) | 0 | 297 | 0 | 107 | 333 | 0 | 0 | 0 | 0 | 76 | 492 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 932 | | 655 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.04 | c0.10 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.05 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.16 | 0.17 | | | | | 0.15 | 0.53 | |
| Uniform Delay, d1 | | 25.1 | | 10.4 | 9.4 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.88 | 1.97 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.5 | 0.2 | | | | | 0.6 | 2.2 | |
| Delay (s) | | 26.0 | | 20.0 | 18.6 | | | | | 24.9 | 30.0 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.0 | | | 18.9 | | | 0.0 | | | 29.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 60.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 174 | 0 | 0 | 253 | 54 | 161 | 509 | 289 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1671 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.42 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 744 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 143 | 193 | 0 | 0 | 281 | 60 | 179 | 566 | 321 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 215 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 143 | 193 | 0 | 0 | 323 | 0 | 179 | 566 | 106 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 708 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.11 | | 0.10 | c0.32 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.54 | | 0.31 | 0.96 | 0.21 | | | |
| Uniform Delay, d1 | 11.7 | 9.4 | | | 35.2 | | 25.0 | 32.9 | 24.1 | | | |
| Progression Factor | 0.28 | 0.28 | | | 1.00 | | 0.75 | 0.79 | 1.87 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 3.5 | | 1.0 | 23.4 | 0.7 | | | |
| Delay (s) | 3.9 | 2.8 | | | 38.7 | | 19.7 | 49.3 | 45.8 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 3.2 | | | 38.7 | | | 43.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 60.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 420 | 327 | 33 | 571 | 0 | 0 | 0 | 0 | 4 | 215 | 193 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3113 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3113 | | 312 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 467 | 363 | 37 | 634 | 0 | 0 | 0 | 0 | 4 | 239 | 214 |
| RTOR Reduction (vph) | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Lane Group Flow (vph) | 0 | 689 | 0 | 37 | 634 | 0 | 0 | 0 | 0 | 4 | 239 | 73 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1121 | | 403 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.22 | | 0.02 | c0.19 | | | | | 0.00 | c0.08 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.61 | | 0.09 | 0.33 | | | | | 0.01 | 0.22 | 0.15 |
| Uniform Delay, d1 | | 26.3 | | 12.3 | 10.9 | | | | | 21.8 | 23.6 | 22.9 |
| Progression Factor | | 1.00 | | 0.57 | 0.73 | | | | | 0.78 | 0.82 | 1.04 |
| Incremental Delay, d2 | | 2.5 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.6 |
| Delay (s) | | 28.8 | | 7.3 | 8.2 | | | | | 17.0 | 19.8 | 24.4 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 28.8 | | | 8.1 | | | 0.0 | | | 21.9 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 83.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

1/14/2013

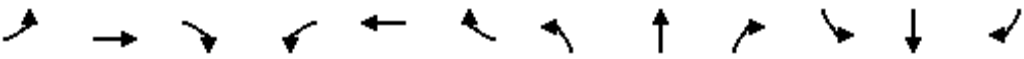
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 368 | 56 | 0 | 0 | 58 | 3 | 546 | 597 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3099 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2341 | | | 3099 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 387 | 59 | 0 | 0 | 61 | 3 | 575 | 628 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 193 | 253 | 0 | 0 | 61 | 0 | 575 | 628 | 23 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1446 | | | 465 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.10 | 0.06 | | | 0.02 | | 0.37 | c0.38 | 0.02 | | | |
| v/s Ratio Perm | c0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.28 | 0.17 | | | 0.13 | | 1.00 | 1.04 | 0.04 | | | |
| Uniform Delay, d1 | 13.9 | 13.2 | | | 36.9 | | 31.5 | 31.5 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 37.5 | 46.3 | 0.1 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 69.0 | 77.8 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | E | C | | | |
| Approach Delay (s) | | 3.7 | | | 37.4 | | | 71.0 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 52.9 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 83.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 126 | 202 | 54 | 45 | 142 | 88 | 35 | 921 | 50 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2832 | | | 2768 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.73 | | | 0.84 | | 0.40 | 1.00 | 1.00 | 0.15 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2093 | | | 2348 | | 605 | 3069 | 1336 | 233 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 130 | 208 | 56 | 46 | 146 | 91 | 36 | 949 | 52 | 91 | 491 | 43 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 61 | 0 | 0 | 0 | 24 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 0 | 378 | 0 | 0 | 222 | 0 | 36 | 949 | 28 | 91 | 491 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 939 | | | 773 | | 296 | 1210 | 519 | 158 | 1165 | 493 |
| v/s Ratio Prot | | c0.03 | | | | | 0.01 | c0.31 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.14 | | | 0.09 | | 0.05 | | 0.02 | 0.22 | | 0.01 |
| v/c Ratio | | 0.40 | | | 0.29 | | 0.12 | 0.78 | 0.05 | 0.58 | 0.42 | 0.03 |
| Uniform Delay, d1 | | 17.0 | | | 21.1 | | 14.6 | 22.6 | 16.2 | 17.0 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.16 | 0.77 | 1.21 | 1.81 | 1.66 | 3.17 |
| Incremental Delay, d2 | | 1.3 | | | 0.9 | | 0.6 | 3.9 | 0.1 | 13.3 | 1.0 | 0.1 |
| Delay (s) | | 18.3 | | | 22.0 | | 17.6 | 21.2 | 19.8 | 44.0 | 32.0 | 51.3 |
| Level of Service | | B | | | C | | B | C | B | D | C | D |
| Approach Delay (s) | | 18.3 | | | 22.0 | | | 21.0 | | | 35.1 | |
| Approach LOS | | B | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 34 | 306 | 0 | 0 | 253 | 63 | 22 | 49 | 76 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1668 | | | 1583 | | | | |
| Flt Permitted | | 0.95 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1623 | | | 1668 | | | 1583 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 37 | 329 | 0 | 0 | 272 | 68 | 24 | 53 | 82 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 53 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 366 | 0 | 0 | 326 | 0 | 0 | 106 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 849 | | | 872 | | | 560 | | | | |
| v/s Ratio Prot | | | | | 0.20 | | | | | | | |
| v/s Ratio Perm | | c0.23 | | | | | | 0.07 | | | | |
| v/c Ratio | | 0.43 | | | 0.37 | | | 0.19 | | | | |
| Uniform Delay, d1 | | 9.5 | | | 9.2 | | | 14.5 | | | | |
| Progression Factor | | 1.00 | | | 0.45 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.6 | | | 1.2 | | | 0.7 | | | | |
| Delay (s) | | 11.1 | | | 5.3 | | | 15.3 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 11.1 | | | 5.3 | | | 15.3 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.6 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 35 | 306 | 24 | 16 | 262 | 38 | 13 | 140 | 28 | 48 | 100 | 18 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1833 | | | 3185 | | | 3152 | |
| Flt Permitted | | 0.95 | | | 0.98 | | | 0.94 | | | 0.85 | |
| Satd. Flow (perm) | | 1797 | | | 1794 | | | 2991 | | | 2705 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 37 | 326 | 26 | 17 | 279 | 40 | 14 | 149 | 30 | 51 | 106 | 19 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 8 | 0 | 0 | 18 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 385 | 0 | 0 | 328 | 0 | 0 | 175 | 0 | 0 | 165 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 829 | | | 828 | | | 1242 | | | 1124 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | | | 0.18 | | | 0.06 | | | c0.06 | |
| v/c Ratio | | 0.46 | | | 0.40 | | | 0.14 | | | 0.15 | |
| Uniform Delay, d1 | | 12.0 | | | 11.5 | | | 11.8 | | | 11.8 | |
| Progression Factor | | 0.61 | | | 0.45 | | | 0.85 | | | 0.57 | |
| Incremental Delay, d2 | | 1.7 | | | 1.4 | | | 0.2 | | | 0.3 | |
| Delay (s) | | 9.1 | | | 6.6 | | | 10.2 | | | 7.0 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 9.1 | | | 6.6 | | | 10.2 | | | 7.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 8.2 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.31 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 68.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 39 | 204 | 16 | 28 | 280 | 61 | 36 | 246 | 69 | 37 | 74 | 16 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1500 | 2936 | | 1582 | 2932 | | 1497 | 3034 | | 1594 | 2938 | |
| Flt Permitted | 0.51 | 1.00 | | 0.61 | 1.00 | | 0.69 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 803 | 2936 | | 1009 | 2932 | | 1090 | 3034 | | 923 | 2938 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 41 | 217 | 17 | 30 | 298 | 65 | 38 | 262 | 73 | 39 | 79 | 17 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 28 | 0 | 0 | 34 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 41 | 225 | 0 | 30 | 335 | 0 | 38 | 301 | 0 | 39 | 88 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 272 | 994 | | 342 | 992 | | 587 | 1634 | | 497 | 1582 | |
| v/s Ratio Prot | | 0.08 | | | c0.11 | | | c0.10 | | | 0.03 | |
| v/s Ratio Perm | 0.05 | | | 0.03 | | | 0.03 | | | 0.04 | | |
| v/c Ratio | 0.15 | 0.23 | | 0.09 | 0.34 | | 0.06 | 0.18 | | 0.08 | 0.06 | |
| Uniform Delay, d1 | 15.0 | 15.4 | | 14.7 | 16.1 | | 7.2 | 7.7 | | 7.2 | 7.1 | |
| Progression Factor | 0.66 | 0.64 | | 0.74 | 0.73 | | 0.68 | 0.71 | | 1.27 | 1.28 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 0.5 | 0.9 | | 0.2 | 0.2 | | 0.3 | 0.1 | |
| Delay (s) | 11.0 | 10.4 | | 11.4 | 12.6 | | 5.1 | 5.7 | | 9.5 | 9.2 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 10.5 | | | 12.5 | | | 5.7 | | | 9.3 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.5 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.24 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 293 | 20 | 37 | 313 | 82 | 11 | 302 | 44 | 41 | 118 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 3014 | | 1332 | 3523 | | | 3432 | | | 3309 | |
| Flt Permitted | 0.49 | 1.00 | | 0.55 | 1.00 | | | 0.95 | | | 0.84 | |
| Satd. Flow (perm) | 718 | 3014 | | 772 | 3523 | | | 3252 | | | 2811 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 68 | 312 | 21 | 39 | 333 | 87 | 12 | 321 | 47 | 44 | 126 | 40 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 36 | 0 | 0 | 17 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 68 | 326 | 0 | 39 | 384 | 0 | 0 | 363 | 0 | 0 | 186 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 342 | 1437 | | 368 | 1680 | | | 1301 | | | 1124 | |
| v/s Ratio Prot | 0.11 | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.05 | | | | c0.11 | | | 0.07 | |
| v/c Ratio | 0.20 | 0.23 | | 0.11 | 0.23 | | | 0.28 | | | 0.17 | |
| Uniform Delay, d1 | 9.8 | 10.0 | | 9.4 | 10.0 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.59 | 1.63 | | 0.74 | 0.68 | | | 0.53 | | | 0.64 | |
| Incremental Delay, d2 | 1.3 | 0.4 | | 0.5 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 16.9 | 16.6 | | 7.5 | 7.1 | | | 7.5 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | 16.7 | | | 7.1 | | | 7.5 | | | 8.3 | | |
| Approach LOS | B | | | A | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.0 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 57.1% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 76 | 226 | 76 | 103 | 311 | 103 | 61 | 65 | 68 | 68 | 65 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1636 | 1409 | | 3024 | | | 1822 | | | 1828 | |
| Flt Permitted | | 0.78 | 1.00 | | 0.81 | | | 0.86 | | | 0.84 | |
| Satd. Flow (perm) | | 1286 | 1409 | | 2480 | | | 1590 | | | 1571 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 82 | 243 | 82 | 111 | 334 | 111 | 66 | 70 | 73 | 73 | 70 | 66 |
| RTOR Reduction (vph) | 0 | 0 | 39 | 0 | 34 | 0 | 0 | 30 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 325 | 43 | 0 | 522 | 0 | 0 | 179 | 0 | 0 | 183 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 673 | 737 | | 1297 | | | 514 | | | 508 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.25 | 0.03 | | 0.21 | | | 0.11 | | | c0.12 | |
| v/c Ratio | | 0.48 | 0.06 | | 0.40 | | | 0.35 | | | 0.36 | |
| Uniform Delay, d1 | | 9.9 | 7.6 | | 9.4 | | | 16.8 | | | 16.9 | |
| Progression Factor | | 2.13 | 5.31 | | 0.34 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.4 | 0.1 | | 0.9 | | | 1.9 | | | 2.0 | |
| Delay (s) | | 23.5 | 40.6 | | 4.0 | | | 18.6 | | | 18.8 | |
| Level of Service | | C | D | | A | | | B | | | B | |
| Approach Delay (s) | | 26.9 | | | 4.0 | | | 18.6 | | | 18.8 | |
| Approach LOS | | C | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 61.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 56 | 291 | 15 | 15 | 417 | 63 | 28 | 102 | 41 | 35 | 73 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1474 | 3019 | | 1568 | 2999 | | | 3444 | | | 3420 | |
| Flt Permitted | 0.42 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.89 | |
| Satd. Flow (perm) | 655 | 3019 | | 915 | 2999 | | | 3123 | | | 3063 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 60 | 310 | 16 | 16 | 444 | 67 | 30 | 109 | 44 | 37 | 78 | 77 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 24 | 0 | 0 | 43 | 0 |
| Lane Group Flow (vph) | 60 | 320 | 0 | 16 | 493 | 0 | 0 | 159 | 0 | 0 | 149 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 282 | 1300 | | 394 | 1292 | | | 1393 | | | 1367 | |
| v/s Ratio Prot | | 0.11 | | | c0.16 | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.02 | | | | c0.05 | | | 0.05 | |
| v/c Ratio | 0.21 | 0.25 | | 0.04 | 0.38 | | | 0.11 | | | 0.11 | |
| Uniform Delay, d1 | 11.6 | 11.8 | | 10.7 | 12.6 | | | 10.5 | | | 10.5 | |
| Progression Factor | 1.09 | 1.09 | | 0.83 | 0.73 | | | 1.01 | | | 0.75 | |
| Incremental Delay, d2 | 1.6 | 0.4 | | 0.2 | 0.8 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.2 | 13.2 | | 9.1 | 10.0 | | | 10.7 | | | 8.0 | |
| Level of Service | B | B | | A | B | | | B | | | A | |
| Approach Delay (s) | | 13.4 | | | 10.0 | | | 10.7 | | | 8.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 66 | 349 | 55 | 73 | 346 | 219 | 32 | 256 | 71 | 171 | 123 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | | 3178 | | | 3072 | | | 3147 | | | 3121 | |
| Flt Permitted | | 0.77 | | | 0.83 | | | 0.91 | | | 0.67 | |
| Satd. Flow (perm) | | 2479 | | | 2572 | | | 2881 | | | 2129 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 71 | 375 | 59 | 78 | 372 | 235 | 34 | 275 | 76 | 184 | 132 | 41 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 103 | 0 | 0 | 33 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 0 | 489 | 0 | 0 | 582 | 0 | 0 | 352 | 0 | 0 | 342 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 992 | | | 1029 | | | 1310 | | | 655 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.20 | | | c0.23 | | | 0.10 | | | c0.16 | |
| v/c Ratio | | 0.49 | | | 0.57 | | | 0.27 | | | 0.52 | |
| Uniform Delay, d1 | | 14.6 | | | 15.1 | | | 11.3 | | | 18.6 | |
| Progression Factor | | 1.85 | | | 1.00 | | | 1.00 | | | 0.87 | |
| Incremental Delay, d2 | | 1.7 | | | 2.2 | | | 0.5 | | | 3.0 | |
| Delay (s) | | 28.7 | | | 17.4 | | | 11.8 | | | 19.2 | |
| Level of Service | | C | | | B | | | B | | | B | |
| Approach Delay (s) | | 28.7 | | | 17.4 | | | 11.8 | | | 19.2 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 556 | 91 | 35 | 578 | 0 | 102 | 0 | 54 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.88 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2666 | | | 1311 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 0 | 598 | 98 | 38 | 622 | 0 | 110 | 0 | 58 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 678 | 0 | 0 | 660 | 0 | 0 | 147 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 978 | | | 233 | | | | | |
| v/s Ratio Prot | c0.23 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.25 | | | c0.11 | | | | | |
| v/c Ratio | 0.35 | | | 0.67 | | | 0.63 | | | | | |
| Uniform Delay, d1 | 7.4 | | | 24.0 | | | 34.3 | | | | | |
| Progression Factor | 0.00 | | | 1.47 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 3.6 | | | 12.2 | | | | | |
| Delay (s) | 0.4 | | | 38.9 | | | 46.5 | | | | | |
| Level of Service | A | | | D | | | D | | | | | |
| Approach Delay (s) | 0.4 | | | 38.9 | | | 46.5 | | | 0.0 | | |
| Approach LOS | A | | | D | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 22.2 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.58 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 59.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 95 | 385 | 144 | 211 | 494 | 141 | 78 | 16 | 143 | 60 | 6 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.45 | 1.00 | | 0.35 | 1.00 | 1.00 | | 0.89 | | 0.42 | 1.00 | 1.00 |
| Satd. Flow (perm) | 723 | 3020 | | 599 | 3257 | 1457 | | 1584 | | 715 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 102 | 414 | 155 | 227 | 531 | 152 | 84 | 17 | 154 | 65 | 6 | 62 |
| RTOR Reduction (vph) | 0 | 37 | 0 | 0 | 0 | 68 | 0 | 78 | 0 | 0 | 0 | 38 |
| Lane Group Flow (vph) | 102 | 532 | 0 | 227 | 531 | 84 | 0 | 177 | 0 | 65 | 6 | 24 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 45.7 | 38.2 | | 52.3 | 41.8 | 49.9 | | 16.6 | | 27.7 | 27.7 | 35.2 |
| Effective Green, g (s) | 45.7 | 38.2 | | 52.3 | 41.8 | 49.9 | | 16.6 | | 27.7 | 27.7 | 35.2 |
| Actuated g/C Ratio | 0.51 | 0.42 | | 0.58 | 0.46 | 0.55 | | 0.18 | | 0.31 | 0.31 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 434 | 1282 | | 475 | 1513 | 808 | | 292 | | 302 | 528 | 570 |
| v/s Ratio Prot | 0.02 | 0.18 | | c0.06 | 0.16 | 0.01 | | | | c0.02 | 0.00 | 0.00 |
| v/s Ratio Perm | 0.10 | | | c0.22 | | 0.05 | | c0.11 | | 0.05 | | 0.01 |
| v/c Ratio | 0.24 | 0.42 | | 0.48 | 0.35 | 0.10 | | 0.61 | | 0.22 | 0.01 | 0.04 |
| Uniform Delay, d1 | 11.7 | 18.1 | | 9.7 | 15.4 | 9.5 | | 33.7 | | 23.6 | 21.6 | 17.0 |
| Progression Factor | 1.94 | 1.70 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.4 | 0.9 | | 1.0 | 0.6 | 0.1 | | 4.1 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 23.0 | 31.7 | | 10.8 | 16.1 | 9.5 | | 37.8 | | 24.0 | 21.7 | 17.0 |
| Level of Service | C | C | | B | B | A | | D | | C | C | B |
| Approach Delay (s) | | 30.4 | | | 13.7 | | | 37.8 | | | 20.6 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 61.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 398 | 190 | 5 | 407 | 0 | 0 | 0 | 0 | 25 | 0 | 439 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 0 | 428 | 204 | 5 | 438 | 0 | 0 | 0 | 0 | 27 | 0 | 472 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | 498 | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 438 | | | 428 | | | 658 | 876 | 214 | 662 | 876 | 219 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 438 | | | 428 | | | 658 | 876 | 214 | 662 | 876 | 219 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 92 | 100 | 39 |
| cM capacity (veh/h) | 1098 | | | 1107 | | | 134 | 279 | 782 | 340 | 279 | 776 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 214 | 214 | 204 | 151 | 292 | 27 | 472 | | | | | |
| Volume Left | 0 | 0 | 0 | 5 | 0 | 27 | 0 | | | | | |
| Volume Right | 0 | 0 | 204 | 0 | 0 | 0 | 472 | | | | | |
| cSH | 1700 | 1700 | 1700 | 1107 | 1700 | 340 | 776 | | | | | |
| Volume to Capacity | 0.13 | 0.13 | 0.12 | 0.00 | 0.17 | 0.08 | 0.61 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 6 | 105 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 16.5 | 16.6 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 16.6 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 47.4% | | ICU Level of Service | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 423 | 0 | 412 | 0 | 0 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 455 | 0 | 443 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 227 | 227 | 443 | | | |
| Volume Left (vph) | 227 | 227 | 443 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.4 | | | |
| Degree Utilization, x | 0.40 | 0.40 | 0.66 | | | |
| Capacity (veh/h) | 545 | 546 | 646 | | | |
| Control Delay (s) | 12.4 | 12.4 | 18.4 | | | |
| Approach Delay (s) | 12.4 | | 18.4 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.4 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 43.5% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 339 | 46 | 126 | 323 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3093 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.46 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3093 | | 763 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 0 | 365 | 49 | 135 | 347 | 0 | 0 | 0 | 0 | 77 | 16 | 45 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 |
| Lane Group Flow (vph) | 0 | 402 | 0 | 135 | 347 | 0 | 0 | 0 | 0 | 0 | 107 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 535 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.13 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.31 | | 0.25 | 0.19 | | | | | | 0.11 | |
| Uniform Delay, d1 | | 16.2 | | 11.1 | 8.6 | | | | | | 20.5 | |
| Progression Factor | | 1.00 | | 0.27 | 0.25 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.6 | | 1.1 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 16.8 | | 4.1 | 2.4 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 16.8 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.22 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 33.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 68 | 343 | 0 | 0 | 400 | 76 | 49 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4422 | | | | |
| Flt Permitted | 0.39 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 673 | 3257 | | | 3073 | | | 4422 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 73 | 369 | 0 | 0 | 430 | 82 | 53 | 70 | 45 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 31 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 73 | 369 | 0 | 0 | 493 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 493 | 1839 | | | 1265 | | | 1405 | | | | |
| v/s Ratio Prot | 0.02 | c0.11 | | | c0.16 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.15 | 0.20 | | | 0.39 | | | 0.10 | | | | |
| Uniform Delay, d1 | 11.9 | 9.1 | | | 17.5 | | | 20.4 | | | | |
| Progression Factor | 0.34 | 0.34 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.6 | 0.2 | | | 0.9 | | | 0.1 | | | | |
| Delay (s) | 4.6 | 3.3 | | | 18.4 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.4 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 39 | 31 | 243 | 31 | 117 | 85 | 52 | 52 | 85 | 117 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.89 | | | 0.76 | | | 0.89 | |
| Satd. Flow (perm) | | 2663 | | | 2652 | | | 1390 | | | 1579 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 42 | 330 | 42 | 33 | 261 | 33 | 126 | 91 | 56 | 56 | 91 | 126 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 401 | 0 | 0 | 314 | 0 | 0 | 259 | 0 | 0 | 225 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 942 | | | 938 | | | 684 | | | 777 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.12 | | | c0.19 | | | 0.14 | |
| v/c Ratio | | 0.43 | | | 0.33 | | | 0.38 | | | 0.29 | |
| Uniform Delay, d1 | | 16.0 | | | 15.4 | | | 10.3 | | | 9.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 1.0 | | | 1.6 | | | 0.9 | |
| Delay (s) | | 17.4 | | | 16.4 | | | 11.9 | | | 10.7 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.4 | | | 16.4 | | | 11.9 | | | 10.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.40 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 62.9% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|-------|-------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 169 | 202 | 39 | 50 | 176 | 62 | 59 | 828 | 58 | 66 | 373 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1484 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.48 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 743 | 3040 | 1347 | 291 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 41 | 53 | 185 | 65 | 62 | 872 | 61 | 69 | 393 | 74 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 37 | 0 | 0 | 45 |
| Lane Group Flow (vph) | 178 | 235 | 0 | 53 | 209 | 0 | 62 | 872 | 24 | 69 | 393 | 29 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | | 1 | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 350 | 1180 | 523 | 180 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.29 | | c0.02 | 0.13 | |
| v/s Ratio Perm | c0.15 | | | 0.04 | | | 0.07 | | 0.02 | 0.14 | | 0.02 |
| v/c Ratio | 0.49 | 0.24 | | 0.14 | 0.18 | | 0.18 | 0.74 | 0.05 | 0.38 | 0.34 | 0.06 |
| Uniform Delay, d1 | 20.6 | 20.7 | | 18.4 | 20.3 | | 14.8 | 22.3 | 16.2 | 16.1 | 18.3 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.55 | 0.60 | 0.84 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 0.8 | 0.3 | | 1.1 | 4.2 | 0.2 | 5.6 | 0.7 | 0.2 |
| Delay (s) | 25.2 | 21.3 | | 19.2 | 20.7 | | 15.9 | 26.5 | 16.4 | 30.6 | 11.7 | 13.8 |
| Level of Service | C | C | | B | C | | B | C | B | C | B | B |
| Approach Delay (s) | | 22.9 | | | 20.4 | | | 25.2 | | | 14.4 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 64.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 38 | 256 | 18 | 14 | 216 | 8 | 35 | 113 | 25 | 19 | 54 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1829 | 1382 | | 1910 | 1331 | | 1861 | 1452 | | 1814 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 269 | 19 | 15 | 227 | 8 | 37 | 119 | 26 | 20 | 57 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 24 |
| Lane Group Flow (vph) | 0 | 309 | 9 | 0 | 242 | 4 | 0 | 156 | 11 | 0 | 77 | 17 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 844 | 638 | | 882 | 614 | | 773 | 603 | | 754 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.20 | 0.02 | | 0.10 | 0.03 |
| Uniform Delay, d1 | | 11.3 | 9.5 | | 10.8 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.46 | 0.36 | | 1.37 | 1.84 | | 0.89 | 0.78 |
| Incremental Delay, d2 | | 1.2 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.8 | 3.4 | | 17.2 | 20.6 | | 10.6 | 8.8 |
| Level of Service | | B | A | | A | A | | B | C | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.7 | | | 17.7 | | | 10.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 54.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 65 | 235 | 10 | 15 | 200 | 30 | 10 | 190 | 20 | 30 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3021 | | 1520 | 2981 | | 1520 | 2996 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.59 | 1.00 | | 0.68 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3021 | | 942 | 2981 | | 1095 | 2996 | | 977 | 2904 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 70 | 253 | 11 | 16 | 215 | 32 | 11 | 204 | 22 | 32 | 75 | 32 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 18 | 0 | 0 | 12 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 70 | 259 | 0 | 16 | 229 | 0 | 11 | 214 | 0 | 32 | 88 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1487 | | 319 | 1009 | | 455 | 1244 | | 406 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.09 | | | c0.08 | | | c0.07 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.03 | | |
| v/c Ratio | 0.43 | 0.17 | | 0.05 | 0.23 | | 0.02 | 0.17 | | 0.08 | 0.07 | |
| Uniform Delay, d1 | 27.1 | 9.2 | | 14.5 | 15.4 | | 11.2 | 12.0 | | 11.5 | 11.5 | |
| Progression Factor | 0.82 | 0.38 | | 0.82 | 0.74 | | 0.64 | 0.72 | | 1.15 | 1.21 | |
| Incremental Delay, d2 | 7.7 | 0.2 | | 0.3 | 0.5 | | 0.1 | 0.3 | | 0.4 | 0.1 | |
| Delay (s) | 30.0 | 3.7 | | 12.2 | 11.9 | | 7.3 | 8.8 | | 13.6 | 14.0 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.2 | | | 11.9 | | | 8.8 | | | 13.9 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 33.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 35 | 235 | 15 | 90 | 200 | 40 | 25 | 275 | 20 | 20 | 115 | 20 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3013 | | 1520 | 2964 | | | 3213 | | | 3172 | |
| Flt Permitted | 0.59 | 1.00 | | 0.95 | 1.00 | | | 0.93 | | | 0.90 | |
| Satd. Flow (perm) | 948 | 3013 | | 1520 | 2964 | | | 2993 | | | 2867 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 38 | 253 | 16 | 97 | 215 | 43 | 27 | 296 | 22 | 22 | 124 | 22 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 38 | 262 | 0 | 97 | 234 | 0 | 0 | 338 | 0 | 0 | 154 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 292 | 927 | | 140 | 1322 | | | 1151 | | | 1103 | |
| v/s Ratio Prot | c0.09 | | | c0.06 | | | 0.08 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.11 | | | 0.05 | | |
| v/c Ratio | 0.13 | 0.28 | | 0.69 | 0.18 | | | 0.29 | | | 0.14 | |
| Uniform Delay, d1 | 16.2 | 17.1 | | 28.6 | 10.8 | | | 13.9 | | | 13.0 | |
| Progression Factor | 0.60 | 0.59 | | 1.36 | 0.92 | | | 0.62 | | | 0.80 | |
| Incremental Delay, d2 | 0.9 | 0.8 | | 22.3 | 0.3 | | | 0.6 | | | 0.3 | |
| Delay (s) | 10.7 | 10.8 | | 61.2 | 10.3 | | | 9.3 | | | 10.6 | |
| Level of Service | B | B | | E | B | | | A | | | B | |
| Approach Delay (s) | 10.8 | | | 24.2 | | | 9.3 | | | 10.6 | | |
| Approach LOS | B | | | C | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.3 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 40.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 247 | 14 | 65 | 306 | 65 | 24 | 88 | 152 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.91 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1556 | | | 3161 | | | | |
| Flt Permitted | | 0.98 | | | 0.92 | | | 1.00 | | | | |
| Satd. Flow (perm) | | 1551 | | | 1437 | | | 3161 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 15 | 266 | 15 | 70 | 329 | 70 | 26 | 95 | 163 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 127 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 294 | 0 | 0 | 461 | 0 | 0 | 157 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 42.8 | | | 42.8 | | | 14.2 | | | | |
| Effective Green, g (s) | | 42.8 | | | 42.8 | | | 14.2 | | | | |
| Actuated g/C Ratio | | 0.66 | | | 0.66 | | | 0.22 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 1021 | | | 946 | | | 691 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.19 | | | 0.32 | | | 0.05 | | | | |
| v/c Ratio | | 0.29 | | | 0.49 | | | 0.23 | | | | |
| Uniform Delay, d1 | | 4.7 | | | 5.6 | | | 20.9 | | | | |
| Progression Factor | | 2.04 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.7 | | | 1.8 | | | 0.7 | | | | |
| Delay (s) | | 10.2 | | | 7.4 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 10.2 | | | 7.4 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

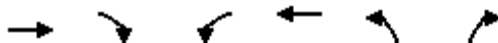


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 76 | 323 | 370 | 42 | 58 | 66 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 86 | 367 | 420 | 48 | 66 | 75 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.87 | | | | 0.87 | 0.87 |
| vC, conflicting volume | 489 | | | | 1010 | 468 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 338 | | | | 937 | 314 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 91 | | | | 71 | 88 |
| cM capacity (veh/h) | 1001 | | | | 229 | 620 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 453 | 468 | 66 | 75 | | |
| Volume Left | 86 | 0 | 66 | 0 | | |
| Volume Right | 0 | 48 | 0 | 75 | | |
| cSH | 1001 | 1700 | 229 | 620 | | |
| Volume to Capacity | 0.09 | 0.28 | 0.29 | 0.12 | | |
| Queue Length 95th (ft) | 7 | 0 | 29 | 10 | | |
| Control Delay (s) | 2.5 | 0.0 | 27.0 | 11.6 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.5 | 0.0 | 18.8 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.6 | | | |
| Intersection Capacity Utilization | | | 60.2% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 426 | 1 | 24 | 582 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1667 | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 458 | 1 | 26 | 626 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 459 | 0 | 0 | 652 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 608 | | |
| v/s Ratio Prot | c0.27 | | | | | |
| v/s Ratio Perm | | | | c0.39 | | |
| v/c Ratio | 0.39 | | | 1.07 | | |
| Uniform Delay, d1 | 5.4 | | | 27.0 | | |
| Progression Factor | 0.02 | | | 1.00 | | |
| Incremental Delay, d2 | 0.4 | | | 57.4 | | |
| Delay (s) | 0.5 | | | 84.4 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.5 | | | 84.4 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 49.8 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.73 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 56.2% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 176 | 182 | 23 | 507 | 0 | 0 | 0 | 0 | 3 | 0 | 196 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 187 | 194 | 24 | 539 | 0 | 0 | 0 | 0 | 3 | 0 | 209 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 539 | | | 187 | | | 872 | 872 | 190 | 682 | 776 | 539 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 539 | | | 187 | | | 872 | 872 | 190 | 682 | 776 | 539 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 98 | | | 100 | 100 | 100 | 99 | 100 | 57 |
| cM capacity (veh/h) | 1039 | | | 1005 | | | 138 | 284 | 825 | 334 | 323 | 481 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 125 | 256 | 564 | 3 | 209 | | | | | | | |
| Volume Left | 0 | 0 | 24 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 194 | 0 | 0 | 209 | | | | | | | |
| cSH | 1700 | 1700 | 1005 | 334 | 481 | | | | | | | |
| Volume to Capacity | 0.07 | 0.15 | 0.02 | 0.01 | 0.43 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 54 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 15.9 | 18.1 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 18.0 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 179 | 0 | 530 | 0 | 0 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 192 | 0 | 570 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 96 | 96 | 570 | | | |
| Volume Left (vph) | 96 | 96 | 570 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.6 | 6.6 | 4.8 | | | |
| Degree Utilization, x | 0.18 | 0.18 | 0.76 | | | |
| Capacity (veh/h) | 513 | 513 | 737 | | | |
| Control Delay (s) | 9.8 | 9.8 | 21.1 | | | |
| Approach Delay (s) | 9.8 | | 21.1 | | | |
| Approach LOS | A | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 18.2 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 43.1% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 420 | 195 | 145 | 427 | 0 | 0 | 0 | 0 | 117 | 107 | 273 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 0 | 447 | 207 | 154 | 454 | 0 | 0 | 0 | 0 | 124 | 114 | 290 |
| RTOR Reduction (vph) | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | 87 |
| Lane Group Flow (vph) | 0 | 447 | 54 | 0 | 608 | 0 | 0 | 0 | 0 | 68 | 216 | 58 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.7 | 39.7 | | 73.7 | | | | | 18.8 | 18.8 | 64.5 |
| Effective Green, g (s) | | 39.7 | 39.7 | | 73.7 | | | | | 18.8 | 18.8 | 64.5 |
| Actuated g/C Ratio | | 0.25 | 0.25 | | 0.46 | | | | | 0.12 | 0.12 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 739 | 298 | | 1553 | | | | | 158 | 434 | 452 |
| v/s Ratio Prot | | c0.15 | | | c0.18 | | | | | 0.05 | c0.06 | |
| v/s Ratio Perm | | | 0.04 | | | | | | | | | 0.05 |
| v/c Ratio | | 0.60 | 0.18 | | 0.39 | | | | | 0.43 | 0.50 | 0.13 |
| Uniform Delay, d1 | | 53.2 | 47.3 | | 28.4 | | | | | 65.6 | 66.2 | 30.1 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 3.7 | 1.3 | | 0.1 | | | | | 1.9 | 0.9 | 0.1 |
| Delay (s) | | 56.9 | 48.7 | | 0.6 | | | | | 67.5 | 67.1 | 30.2 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 54.3 | | | 0.6 | | | 0.0 | | | 57.0 | |
| Approach LOS | | D | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 29.8 | | | |
| Intersection Capacity Utilization | | | 50.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 204 | 333 | 0 | 0 | 380 | 91 | 192 | 122 | 110 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3008 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3008 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 219 | 358 | 0 | 0 | 409 | 98 | 206 | 131 | 118 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 52 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 219 | 358 | 0 | 0 | 409 | 19 | 154 | 249 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 78.3 | 78.3 | | | 30.8 | 30.8 | 24.1 | 24.1 | | | | |
| Effective Green, g (s) | 78.3 | 78.3 | | | 30.8 | 30.8 | 24.1 | 24.1 | | | | |
| Actuated g/C Ratio | 0.49 | 0.49 | | | 0.19 | 0.19 | 0.15 | 0.15 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 770 | 1647 | | | 606 | 280 | 231 | 453 | | | | |
| v/s Ratio Prot | c0.14 | 0.11 | | | c0.13 | | c0.10 | 0.08 | | | | |
| v/s Ratio Perm | | | | | 0.01 | | | | | | | |
| v/c Ratio | 0.28 | 0.22 | | | 0.67 | 0.07 | 0.67 | 0.55 | | | | |
| Uniform Delay, d1 | 24.2 | 23.3 | | | 60.0 | 52.8 | 64.2 | 62.9 | | | | |
| Progression Factor | 0.04 | 0.04 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 3.0 | 0.1 | 7.1 | 1.4 | | | | |
| Delay (s) | 1.1 | 1.0 | | | 62.9 | 53.0 | 71.2 | 64.4 | | | | |
| Level of Service | A | A | | | E | D | E | E | | | | |
| Approach Delay (s) | | 1.1 | | | 61.0 | | 66.7 | | | | 0.0 | |
| Approach LOS | | A | | | E | | E | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.2 | | | HCM Level of Service | | D | | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | 28.8 | | | | |
| Intersection Capacity Utilization | | | 46.8% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 192 | 238 | 66 | 34 | 136 | 44 | 78 | 730 | 55 | 46 | 348 | 81 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1535 | 1556 | 1328 | 1594 | 1718 | | 1520 | 2990 | | 1508 | 2869 | |
| Flt Permitted | 0.54 | 1.00 | 1.00 | 0.56 | 1.00 | | 0.42 | 1.00 | | 0.23 | 1.00 | |
| Satd. Flow (perm) | 866 | 1556 | 1328 | 939 | 1718 | | 669 | 2990 | | 369 | 2869 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 196 | 243 | 67 | 35 | 139 | 45 | 80 | 745 | 56 | 47 | 355 | 83 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 12 | 0 | 0 | 6 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 196 | 243 | 23 | 35 | 172 | 0 | 80 | 795 | 0 | 47 | 416 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 41.5 | 36.0 | | 38.7 | 34.6 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 39.5 | 36.0 | | 36.7 | 34.6 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.44 | 0.40 | | 0.41 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 391 | 554 | 458 | 338 | 538 | | 335 | 1191 | | 189 | 1098 | |
| v/s Ratio Prot | c0.03 | 0.16 | | 0.00 | 0.10 | | c0.01 | c0.27 | | 0.01 | 0.14 | |
| v/s Ratio Perm | c0.17 | | 0.02 | 0.03 | | | 0.09 | | | 0.09 | | |
| v/c Ratio | 0.50 | 0.44 | 0.05 | 0.10 | 0.32 | | 0.24 | 0.67 | | 0.25 | 0.38 | |
| Uniform Delay, d1 | 19.8 | 22.2 | 19.7 | 20.4 | 23.7 | | 15.3 | 22.3 | | 17.2 | 20.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 2.5 | 0.2 | 0.1 | 1.6 | | 0.4 | 3.0 | | 0.7 | 1.0 | |
| Delay (s) | 20.8 | 24.7 | 19.9 | 20.5 | 25.3 | | 15.7 | 25.3 | | 17.9 | 21.1 | |
| Level of Service | C | C | B | C | C | | B | C | | B | C | |
| Approach Delay (s) | | 22.6 | | | 24.5 | | | 24.4 | | | 20.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 67.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↕ | | | ↕ | |
| Volume (vph) | 40 | 243 | 15 | 5 | 182 | 19 | 33 | 75 | 15 | 10 | 37 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1913 | | | 1848 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.99 | 1.00 | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | | 1815 | 1482 | | 1592 | 1198 | | 1800 | | | 1812 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 44 | 267 | 16 | 5 | 200 | 21 | 36 | 82 | 16 | 11 | 41 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 11 | 0 | 8 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 0 | 311 | 8 | 0 | 205 | 10 | 0 | 126 | 0 | 0 | 67 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 6 | | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 894 | 730 | | 784 | 590 | | 748 | | | 753 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.01 | | c0.07 | | | 0.04 | |
| v/c Ratio | | 0.35 | 0.01 | | 0.26 | 0.02 | | 0.17 | | | 0.09 | |
| Uniform Delay, d1 | | 10.1 | 8.4 | | 9.6 | 8.4 | | 11.9 | | | 11.5 | |
| Progression Factor | | 1.00 | 1.00 | | 2.02 | 2.98 | | 1.00 | | | 1.51 | |
| Incremental Delay, d2 | | 1.1 | 0.0 | | 0.8 | 0.1 | | 0.5 | | | 0.2 | |
| Delay (s) | | 11.2 | 8.4 | | 20.2 | 25.3 | | 12.4 | | | 17.7 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 11.0 | | | 20.7 | | | 12.4 | | | 17.7 | |
| Approach LOS | | B | | | C | | | B | | | B | |

Intersection Summary




















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 14.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.27 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 52.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 58 | 160 | 19 | 6 | 133 | 6 | 32 | 176 | 17 | 8 | 45 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1663 | 1392 | | 1604 | 1497 | | 1754 | 1390 | | 1652 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 1496 | 1392 | | 1588 | 1497 | | 1690 | 1390 | | 1618 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 60 | 167 | 20 | 6 | 139 | 6 | 33 | 183 | 18 | 8 | 47 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 4 | 0 | 0 | 9 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 0 | 227 | 7 | 0 | 145 | 2 | 0 | 216 | 9 | 0 | 68 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 529 | 493 | | 562 | 530 | | 832 | 684 | | 797 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | 0.01 | | 0.09 | 0.00 | | c0.13 | 0.01 | | 0.04 | |
| v/c Ratio | | 0.43 | 0.01 | | 0.26 | 0.00 | | 0.26 | 0.01 | | 0.09 | |
| Uniform Delay, d1 | | 16.0 | 13.6 | | 14.9 | 13.6 | | 9.6 | 8.4 | | 8.7 | |
| Progression Factor | | 1.98 | 3.07 | | 0.92 | 0.91 | | 0.39 | 0.40 | | 0.99 | |
| Incremental Delay, d2 | | 2.4 | 0.1 | | 1.1 | 0.0 | | 0.7 | 0.0 | | 0.2 | |
| Delay (s) | | 34.1 | 42.0 | | 14.8 | 12.4 | | 4.4 | 3.4 | | 8.8 | |
| Level of Service | | C | D | | B | B | | A | A | | A | |
| Approach Delay (s) | | 34.8 | | | 14.7 | | | 4.3 | | | 8.8 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 56.9% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 138 | 18 | 27 | 9 | 17 | 6 | 26 | 286 | 19 | 5 | 168 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.98 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1770 | 1390 | | 1815 | | | 1974 | | | 1873 | 1328 |
| Flt Permitted | | 0.76 | 1.00 | | 0.94 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1413 | 1390 | | 1726 | | | 1931 | | | 1862 | 1328 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 145 | 19 | 28 | 9 | 18 | 6 | 27 | 301 | 20 | 5 | 177 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 16 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 44 |
| Lane Group Flow (vph) | 0 | 164 | 12 | 0 | 29 | 0 | 0 | 344 | 0 | 0 | 182 | 42 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 631 | 577 | | 451 | | | 951 | | | 917 | 654 |
| v/s Ratio Prot | | c0.03 | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | 0.01 | | 0.02 | | | c0.18 | | | 0.10 | 0.03 |
| v/c Ratio | | 0.26 | 0.02 | | 0.06 | | | 0.36 | | | 0.20 | 0.06 |
| Uniform Delay, d1 | | 12.5 | 11.2 | | 18.0 | | | 10.2 | | | 9.3 | 8.7 |
| Progression Factor | | 0.48 | 0.67 | | 1.00 | | | 0.55 | | | 0.46 | 0.33 |
| Incremental Delay, d2 | | 0.9 | 0.1 | | 0.3 | | | 1.0 | | | 0.5 | 0.2 |
| Delay (s) | | 6.9 | 7.6 | | 18.3 | | | 6.7 | | | 4.8 | 3.0 |
| Level of Service | | A | A | | B | | | A | | | A | A |
| Approach Delay (s) | | 7.0 | | | 18.3 | | | 6.7 | | | 4.2 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 6.4 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.8% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013























| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 765 | 212 | 236 | 1004 | 0 | 0 | 0 | 0 | 270 | 196 | 366 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4303 | | 1589 | 3226 | | | | | 1419 | 2712 | 1355 |
| Flt Permitted | | 1.00 | | 0.22 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4303 | | 366 | 3226 | | | | | 1419 | 2712 | 1355 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 781 | 216 | 241 | 1024 | 0 | 0 | 0 | 0 | 276 | 200 | 373 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 90 |
| Lane Group Flow (vph) | 0 | 959 | 0 | 241 | 1024 | 0 | 0 | 0 | 0 | 221 | 343 | 108 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 53.0 | | 70.3 | 70.3 | | | | | 22.7 | 22.7 | 22.7 |
| Effective Green, g (s) | | 53.0 | | 70.3 | 70.3 | | | | | 22.7 | 22.7 | 22.7 |
| Actuated g/C Ratio | | 0.50 | | 0.67 | 0.67 | | | | | 0.22 | 0.22 | 0.22 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2172 | | 394 | 2160 | | | | | 307 | 586 | 293 |
| v/s Ratio Prot | | 0.22 | | c0.07 | 0.32 | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | | | | c0.16 | 0.13 | 0.08 |
| v/c Ratio | | 0.44 | | 0.61 | 0.47 | | | | | 0.72 | 0.59 | 0.37 |
| Uniform Delay, d1 | | 16.6 | | 8.1 | 8.4 | | | | | 38.2 | 36.9 | 35.0 |
| Progression Factor | | 1.00 | | 1.62 | 1.58 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.7 | | 2.1 | 0.5 | | | | | 8.1 | 1.6 | 0.9 |
| Delay (s) | | 17.2 | | 15.3 | 13.8 | | | | | 46.3 | 38.5 | 36.0 |
| Level of Service | | B | | B | B | | | | | D | D | D |
| Approach Delay (s) | | 17.2 | | | 14.1 | | | 0.0 | | | 40.0 | |
| Approach LOS | | B | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 69.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |  | |    | | | | |
| Volume (vph) | 301 | 734 | 0 | 0 | 815 | 234 | 425 | 281 | 297 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1450 | | 4421 | | | | |
| Flt Permitted | 0.21 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 633 | 3138 | | | 3119 | 1450 | | 4421 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 317 | 773 | 0 | 0 | 858 | 246 | 447 | 296 | 313 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 107 | 0 | 72 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 317 | 773 | 0 | 0 | 858 | 139 | 0 | 984 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 63.5 | 63.5 | | | 46.4 | 46.4 | | 29.5 | | | | |
| Effective Green, g (s) | 63.5 | 63.5 | | | 46.4 | 46.4 | | 29.5 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.44 | 0.44 | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 624 | 1898 | | | 1378 | 641 | | 1242 | | | | |
| v/s Ratio Prot | c0.05 | 0.25 | | | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.25 | | | | | 0.10 | | 0.22 | | | | |
| v/c Ratio | 0.51 | 0.41 | | | 0.62 | 0.22 | | 0.79 | | | | |
| Uniform Delay, d1 | 11.9 | 10.9 | | | 22.6 | 18.1 | | 34.9 | | | | |
| Progression Factor | 0.93 | 1.03 | | | 0.90 | 1.16 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.6 | | | 1.6 | 0.6 | | 4.1 | | | | |
| Delay (s) | 11.7 | 11.8 | | | 21.9 | 21.6 | | 39.0 | | | | |
| Level of Service | B | B | | | C | C | | D | | | | |
| Approach Delay (s) | | 11.8 | | | 21.8 | | | 39.0 | | | 0.0 | |
| Approach LOS | | B | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 69.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 95 | 405 | 204 | 71 | 683 | 38 | 226 | 178 | 40 | 37 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1292 | 1601 | 3232 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.17 | 1.00 | 1.00 | 0.50 | 1.00 | | 0.52 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 284 | 3061 | 1292 | 844 | 3232 | | 787 | 3007 | | 987 | 2782 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 101 | 431 | 217 | 76 | 727 | 40 | 240 | 189 | 43 | 39 | 118 | 97 |
| RTOR Reduction (vph) | 0 | 0 | 90 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 101 | 431 | 127 | 76 | 763 | 0 | 240 | 211 | 0 | 39 | 135 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 61.7 | 51.9 | 61.6 | 38.4 | 32.1 | | 31.3 | 22.8 | | 23.1 | 18.1 | |
| Effective Green, g (s) | 61.7 | 51.9 | 61.6 | 38.4 | 32.1 | | 31.3 | 22.8 | | 23.1 | 18.1 | |
| Actuated g/C Ratio | 0.59 | 0.49 | 0.59 | 0.37 | 0.31 | | 0.30 | 0.22 | | 0.22 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 485 | 1513 | 758 | 354 | 988 | | 295 | 653 | | 244 | 480 | |
| v/s Ratio Prot | c0.05 | c0.14 | 0.02 | 0.01 | c0.24 | | c0.08 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.07 | | 0.08 | 0.07 | | | c0.17 | | | 0.03 | | |
| v/c Ratio | 0.21 | 0.28 | 0.17 | 0.21 | 0.77 | | 0.81 | 0.32 | | 0.16 | 0.28 | |
| Uniform Delay, d1 | 11.5 | 15.6 | 9.9 | 22.2 | 33.1 | | 32.6 | 34.6 | | 32.8 | 37.8 | |
| Progression Factor | 0.84 | 0.95 | 2.07 | 1.00 | 1.00 | | 0.90 | 0.84 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 0.4 | 0.1 | 0.3 | 5.8 | | 15.1 | 1.0 | | 0.3 | 1.1 | |
| Delay (s) | 10.5 | 15.3 | 20.7 | 22.5 | 39.0 | | 44.5 | 30.0 | | 33.1 | 38.9 | |
| Level of Service | B | B | C | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 16.2 | | | 37.5 | | | 37.4 | | | 38.0 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 69.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 106 | 229 | 47 | 139 | 85 | 323 | 375 | 62 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1632 | 2807 | | 1463 | 3016 | | 1589 | 3257 | | 1549 | 3136 | |
| Flt Permitted | 0.60 | 1.00 | | 0.47 | 1.00 | | 0.45 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 1029 | 2807 | | 728 | 3016 | | 750 | 3257 | | 779 | 3136 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 55 | 116 | 252 | 52 | 153 | 93 | 355 | 412 | 68 | 100 | 284 | 59 |
| RTOR Reduction (vph) | 0 | 183 | 0 | 0 | 67 | 0 | 0 | 13 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 55 | 185 | 0 | 52 | 179 | 0 | 355 | 467 | 0 | 100 | 327 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.9 | | 35.9 | 29.0 | | 53.2 | 41.9 | | 38.3 | 31.0 | |
| Effective Green, g (s) | 35.7 | 28.9 | | 35.9 | 29.0 | | 53.2 | 41.9 | | 38.3 | 31.0 | |
| Actuated g/C Ratio | 0.34 | 0.28 | | 0.34 | 0.28 | | 0.51 | 0.40 | | 0.36 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 389 | 773 | | 297 | 833 | | 525 | 1300 | | 338 | 926 | |
| v/s Ratio Prot | 0.01 | c0.07 | | c0.01 | 0.06 | | c0.12 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.04 | | | 0.05 | | | c0.23 | | | 0.09 | | |
| v/c Ratio | 0.14 | 0.24 | | 0.18 | 0.21 | | 0.68 | 0.36 | | 0.30 | 0.35 | |
| Uniform Delay, d1 | 23.7 | 29.5 | | 23.6 | 29.2 | | 16.8 | 22.1 | | 22.6 | 29.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.01 | 0.90 | |
| Incremental Delay, d2 | 0.2 | 0.7 | | 0.3 | 0.6 | | 3.6 | 0.8 | | 0.6 | 1.0 | |
| Delay (s) | 23.9 | 30.3 | | 24.0 | 29.8 | | 20.3 | 22.9 | | 23.5 | 27.2 | |
| Level of Service | C | C | | C | C | | C | C | | C | C | |
| Approach Delay (s) | | 29.4 | | | 28.8 | | | 21.8 | | | 26.4 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 65.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 151 | 359 | 73 | 6 | 372 | 100 | 56 | 490 | 6 | 65 | 251 | 81 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2889 | | | 2888 | | 1435 | 3187 | | 1450 | 2789 | |
| Flt Permitted | | 0.61 | | | 0.95 | | 0.51 | 1.00 | | 0.37 | 1.00 | |
| Satd. Flow (perm) | | 1772 | | | 2739 | | 776 | 3187 | | 569 | 2789 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 162 | 386 | 78 | 6 | 400 | 108 | 60 | 527 | 6 | 70 | 270 | 87 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 609 | 0 | 0 | 477 | 0 | 60 | 532 | 0 | 70 | 309 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 805 | | | 801 | | 351 | 1079 | | 282 | 944 | |
| v/s Ratio Prot | | c0.05 | | | | | 0.01 | c0.17 | | c0.02 | 0.11 | |
| v/s Ratio Perm | | c0.27 | | | 0.17 | | 0.06 | | | 0.08 | | |
| v/c Ratio | | 0.76 | | | 0.60 | | 0.17 | 0.49 | | 0.25 | 0.33 | |
| Uniform Delay, d1 | | 16.2 | | | 19.7 | | 12.2 | 17.1 | | 12.4 | 16.0 | |
| Progression Factor | | 1.00 | | | 1.62 | | 0.80 | 0.67 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 6.6 | | | 1.9 | | 1.0 | 1.5 | | 2.1 | 0.9 | |
| Delay (s) | | 22.8 | | | 33.8 | | 10.8 | 12.9 | | 14.5 | 16.9 | |
| Level of Service | | C | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 22.8 | | | 33.8 | | | 12.7 | | | 16.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 64.0% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 40 | 90 | 37 | 59 | 111 | 11 | 31 | 529 | 65 | 8 | 291 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1665 | 1856 | | 1611 | 1938 | | 1658 | 3211 | | 1137 | 3196 | |
| Flt Permitted | 0.67 | 1.00 | | 0.67 | 1.00 | | 0.54 | 1.00 | | 0.37 | 1.00 | |
| Satd. Flow (perm) | 1178 | 1856 | | 1134 | 1938 | | 942 | 3211 | | 441 | 3196 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 43 | 98 | 40 | 64 | 121 | 12 | 34 | 575 | 71 | 9 | 316 | 38 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 6 | 0 | 0 | 15 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 43 | 115 | 0 | 64 | 127 | 0 | 34 | 631 | 0 | 9 | 340 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 435 | 685 | | 419 | 716 | | 449 | 1531 | | 210 | 1524 | |
| v/s Ratio Prot | | 0.06 | | | c0.07 | | | c0.20 | | | 0.11 | |
| v/s Ratio Perm | 0.04 | | | 0.06 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.17 | | 0.15 | 0.18 | | 0.08 | 0.41 | | 0.04 | 0.22 | |
| Uniform Delay, d1 | 13.4 | 13.8 | | 13.7 | 13.8 | | 9.2 | 11.1 | | 9.1 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.77 | 1.85 | | 1.00 | 1.00 | | 0.59 | 0.61 | |
| Incremental Delay, d2 | 0.5 | 0.5 | | 0.6 | 0.4 | | 0.3 | 0.8 | | 0.4 | 0.3 | |
| Delay (s) | 13.9 | 14.3 | | 24.8 | 25.9 | | 9.6 | 11.9 | | 5.7 | 6.4 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | | 14.2 | | | 25.6 | | | 11.8 | | | 6.4 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.31 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 54.5% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|-----------------------------------|--------|------|-------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 403 | 146 | 505 | 13 | 3 | 12 | 3 | 41 | 9 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.90 | | | 0.95 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | | 2958 | | | | 1732 | | | 1859 | | |
| Flt Permitted | 1.00 | | 0.67 | | | | 0.95 | | | 0.88 | | |
| Satd. Flow (perm) | 2956 | | 1999 | | | | 1657 | | | 1681 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 448 | 162 | 561 | 14 | 3 | 13 | 3 | 46 | 10 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 36 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 448 | 0 | 735 | 0 | 0 | 0 | 29 | 0 | 0 | 13 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | | Perm | Perm | | | Perm | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 919 | | | | 357 | | | 362 | | |
| v/s Ratio Prot | 0.15 | | c0.07 | | | | | | | | | |
| v/s Ratio Perm | | | c0.26 | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.55 | | 0.80 | | | | 0.08 | | | 0.04 | | |
| Uniform Delay, d1 | 20.0 | | 16.6 | | | | 20.4 | | | 20.2 | | |
| Progression Factor | 1.32 | | 0.84 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 1.9 | | 7.0 | | | | 0.4 | | | 0.2 | | |
| Delay (s) | 28.4 | | 21.0 | | | | 20.8 | | | 20.3 | | |
| Level of Service | C | | C | | | | C | | | C | | |
| Approach Delay (s) | 28.4 | | 21.0 | | | | 20.8 | | | 20.3 | | |
| Approach LOS | C | | C | | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 14.0 | | |
| Intersection Capacity Utilization | | | 73.5% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

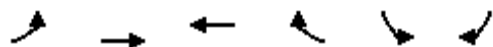


| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 173 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1430 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1430 | |
| Peak-hour factor, PHF | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 192 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 193 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.13 | |
| v/s Ratio Perm | | |
| v/c Ratio | 0.88 | |
| Uniform Delay, d1 | 26.9 | |
| Progression Factor | 1.11 | |
| Incremental Delay, d2 | 35.1 | |
| Delay (s) | 64.8 | |
| Level of Service | E | |
| Approach Delay (s) | 64.8 | |
| Approach LOS | E | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 157 | 469 | 508 | 57 | 41 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3217 | 3208 | | 1629 | 1457 |
| Flt Permitted | | 0.69 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2253 | 3208 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 169 | 504 | 546 | 61 | 44 | 168 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 124 |
| Lane Group Flow (vph) | 0 | 673 | 594 | 0 | 44 | 44 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1386 | 1974 | | 426 | 381 |
| v/s Ratio Prot | | | 0.19 | | 0.03 | |
| v/s Ratio Perm | | c0.30 | | | | c0.03 |
| v/c Ratio | | 0.49 | 0.30 | | 0.10 | 0.12 |
| Uniform Delay, d1 | | 6.9 | 5.9 | | 18.2 | 18.3 |
| Progression Factor | | 1.21 | 1.38 | | 0.92 | 0.78 |
| Incremental Delay, d2 | | 1.0 | 0.4 | | 0.5 | 0.6 |
| Delay (s) | | 9.3 | 8.5 | | 17.2 | 14.9 |
| Level of Service | | A | A | | B | B |
| Approach Delay (s) | | 9.3 | 8.5 | | 15.4 | |
| Approach LOS | | A | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 9.8 | | HCM Level of Service | A |
| HCM Volume to Capacity ratio | | | 0.38 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 48.6% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 46 | 464 | 516 | 169 | 118 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2927 | 2905 | | 1464 | 1373 |
| Flt Permitted | | 0.85 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2501 | 2905 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 50 | 504 | 561 | 184 | 128 | 53 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 0 | 38 |
| Lane Group Flow (vph) | 0 | 554 | 696 | 0 | 128 | 15 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1462 | 1698 | | 428 | 401 |
| v/s Ratio Prot | | | c0.24 | | c0.09 | |
| v/s Ratio Perm | | 0.22 | | | | 0.01 |
| v/c Ratio | | 0.38 | 0.41 | | 0.30 | 0.04 |
| Uniform Delay, d1 | | 7.2 | 7.4 | | 17.8 | 16.5 |
| Progression Factor | | 0.21 | 0.54 | | 0.87 | 0.99 |
| Incremental Delay, d2 | | 0.7 | 0.6 | | 1.8 | 0.2 |
| Delay (s) | | 2.2 | 4.6 | | 17.2 | 16.5 |
| Level of Service | | A | A | | B | B |
| Approach Delay (s) | | 2.2 | 4.6 | | 17.0 | |
| Approach LOS | | A | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 5.2 | | HCM Level of Service | A |
| HCM Volume to Capacity ratio | | | 0.37 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 52.6% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave






















1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 420 | 127 | 92 | 472 | 326 | 64 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.98 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2214 | | 1768 | 2436 | 1817 | |
| Flt Permitted | 1.00 | | 0.27 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2214 | | 496 | 2436 | 1817 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 462 | 140 | 101 | 519 | 358 | 70 |
| RTOR Reduction (vph) | 17 | 0 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 585 | 0 | 101 | 519 | 417 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1056 | | 237 | 1162 | 671 | |
| v/s Ratio Prot | c0.26 | | | 0.21 | c0.23 | |
| v/s Ratio Perm | | | 0.20 | | | |
| v/c Ratio | 0.55 | | 0.43 | 0.45 | 0.62 | |
| Uniform Delay, d1 | 12.1 | | 11.2 | 11.3 | 16.8 | |
| Progression Factor | 1.20 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.0 | | 5.5 | 1.2 | 4.3 | |
| Delay (s) | 16.5 | | 16.7 | 12.5 | 21.1 | |
| Level of Service | B | | B | B | C | |
| Approach Delay (s) | 16.5 | | | 13.2 | 21.1 | |
| Approach LOS | B | | | B | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 16.5 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.58 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 65.9% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  | |
| Volume (vph) | 1 | 454 | 69 | 227 | 552 | 8 | 56 | 0 | 144 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.44 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.72 | |
| Satd. Flow (perm) | 863 | 3213 | 1422 | 748 | 3138 | 1366 | | 1309 | 1443 | | 734 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 1 | 473 | 72 | 236 | 575 | 8 | 58 | 0 | 150 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 26 | 0 | 0 | 2 | 0 | 0 | 134 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 473 | 46 | 236 | 575 | 6 | 0 | 58 | 16 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 53.9 | 53.9 | 53.9 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | 9.3 | |
| Effective Green, g (s) | 53.9 | 53.9 | 53.9 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | 9.3 | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | 0.11 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 547 | 2037 | 902 | 703 | 2499 | 1088 | | 143 | 158 | | 80 | |
| v/s Ratio Prot | | 0.15 | | c0.04 | 0.18 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.03 | c0.22 | | 0.00 | | c0.04 | 0.01 | | 0.00 | |
| v/c Ratio | 0.00 | 0.23 | 0.05 | 0.34 | 0.23 | 0.01 | | 0.41 | 0.10 | | 0.01 | |
| Uniform Delay, d1 | 5.7 | 6.7 | 5.9 | 2.2 | 2.2 | 1.8 | | 35.3 | 34.1 | | 33.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.3 | 0.1 | 0.3 | 0.0 | 0.0 | | 1.9 | 0.3 | | 0.1 | |
| Delay (s) | 5.7 | 6.9 | 6.0 | 2.5 | 2.2 | 1.8 | | 37.2 | 34.4 | | 33.8 | |
| Level of Service | A | A | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 6.8 | | | 2.3 | | | 35.2 | | | 33.8 | |
| Approach LOS | | A | | | A | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 8.2 | | | | HCM Level of Service | | A | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 7.0 | | | |
| Intersection Capacity Utilization | | | 41.5% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 10 | 626 | 645 | 35 | 21 | 8 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3016 | | 1486 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2858 | 3016 | | 1486 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 11 | 673 | 694 | 38 | 23 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 684 | 728 | 0 | 24 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1048 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.24 | | c0.02 | |
| v/s Ratio Perm | | c0.24 | | | | |
| v/c Ratio | | 0.65 | 0.34 | | 0.20 | |
| Uniform Delay, d1 | | 23.7 | 4.9 | | 38.9 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 3.2 | 0.3 | | 3.9 | |
| Delay (s) | | 26.9 | 0.3 | | 42.8 | |
| Level of Service | | C | A | | D | |
| Approach Delay (s) | | 26.9 | 0.3 | | 42.8 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 13.8 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.49 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 36.6% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 69 | 388 | 1 | 24 | 487 | 71 | 0 | 0 | 1 | 38 | 3 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (prot) | | 1729 | | | 3229 | | | 1432 | | | 1611 | 1282 |
| Flt Permitted | | 0.82 | | | 0.94 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (perm) | | 1435 | | | 3030 | | | 1432 | | | 1619 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 77 | 431 | 1 | 27 | 541 | 79 | 0 | 0 | 1 | 42 | 3 | 72 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 0 | 509 | 0 | 0 | 634 | 0 | 0 | 0 | 0 | 0 | 45 | 24 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 523 | | | 1637 | | | 152 | | | 475 | 422 |
| v/s Ratio Prot | | | | | c0.06 | | | 0.00 | | | c0.02 | |
| v/s Ratio Perm | | c0.35 | | | 0.14 | | | | | | c0.01 | 0.02 |
| v/c Ratio | | 0.97 | | | 0.39 | | | 0.00 | | | 0.09 | 0.06 |
| Uniform Delay, d1 | | 26.6 | | | 11.8 | | | 34.0 | | | 21.8 | 19.5 |
| Progression Factor | | 1.00 | | | 1.38 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 33.3 | | | 0.1 | | | 0.0 | | | 0.4 | 0.3 |
| Delay (s) | | 59.9 | | | 16.4 | | | 34.0 | | | 22.2 | 19.7 |
| Level of Service | | E | | | B | | | C | | | C | B |
| Approach Delay (s) | | 59.9 | | | 16.4 | | | 34.0 | | | 20.7 | |
| Approach LOS | | E | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 66.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 27 | 33 | 939 | 54 | 34 | 17 | 48 | 23 | 22 | 85 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.93 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1551 | 3022 | | 1587 | 3021 | | | 1787 | | | 1701 | |
| Flt Permitted | 0.20 | 1.00 | | 0.37 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 327 | 3022 | | 610 | 3021 | | | 1614 | | | 1628 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 41 | 623 | 28 | 34 | 978 | 56 | 35 | 18 | 50 | 24 | 23 | 89 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 32 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 41 | 646 | 0 | 34 | 1028 | 0 | 0 | 71 | 0 | 0 | 109 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 171 | 1581 | | 319 | 1580 | | | 571 | | | 576 | |
| v/s Ratio Prot | | 0.21 | | | c0.34 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | 0.04 | | | c0.07 | |
| v/c Ratio | 0.24 | 0.41 | | 0.11 | 0.65 | | | 0.12 | | | 0.19 | |
| Uniform Delay, d1 | 8.5 | 9.4 | | 7.8 | 11.2 | | | 14.2 | | | 14.5 | |
| Progression Factor | 1.00 | 1.00 | | 0.72 | 1.29 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.3 | 0.8 | | 0.6 | 1.9 | | | 0.4 | | | 0.7 | |
| Delay (s) | 11.7 | 10.2 | | 6.3 | 16.3 | | | 14.6 | | | 15.3 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.3 | | | 16.0 | | | 14.6 | | | 15.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 778 | 5 | 28 | 555 | 35 | 0 | 0 | 0 | 551 | 85 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 780 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 350 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 27 | 837 | 5 | 30 | 597 | 38 | 0 | 0 | 0 | 592 | 91 | 388 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 27 | 842 | 0 | 30 | 597 | 21 | 0 | 0 | 0 | 592 | 91 | 216 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.19 | | | | | c0.18 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.04 | | | | | | 0.15 |
| v/c Ratio | 0.17 | 0.75 | | 0.05 | 0.33 | 0.07 | | | | 0.78 | 0.23 | 0.63 |
| Uniform Delay, d1 | 31.5 | 38.8 | | 15.2 | 15.3 | 13.0 | | | | 46.9 | 40.6 | 45.0 |
| Progression Factor | 0.84 | 0.86 | | 0.37 | 0.77 | 1.35 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.6 | | 0.1 | 0.4 | 0.4 | | | | 7.8 | 1.3 | 8.6 |
| Delay (s) | 28.6 | 37.8 | | 5.8 | 12.2 | 17.9 | | | | 54.8 | 41.9 | 53.7 |
| Level of Service | C | D | | A | B | B | | | | D | D | D |
| Approach Delay (s) | | 37.5 | | | 12.2 | | 0.0 | | | | 53.3 | |
| Approach LOS | | D | | | B | | A | | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 37.5 | | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | 0.60 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 130.0 | | | Sum of lost time (s) | | | | 13.0 | | | |
| Intersection Capacity Utilization | | 48.7% | | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|------|----------------------|-------|------|-------|------|--------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↰↱ | ↰↱ | | ↰ | ↰↱ | ↰ | | ↰↱ | ↰ | ↰ | | ↰ |
| Volume (vph) | 329 | 787 | 213 | 49 | 499 | 257 | 91 | 233 | 51 | 37 | 0 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 350 | 837 | 227 | 52 | 531 | 273 | 97 | 248 | 54 | 39 | 0 | 30 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 206 | 0 | 0 | 42 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 350 | 1046 | 0 | 52 | 531 | 67 | 0 | 345 | 12 | 39 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.32 | | 0.03 | c0.17 | | | c0.10 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.31 | 0.61 | | 0.50 | 0.69 | 0.27 | | 0.49 | 0.04 | 0.74 | | 0.04 |
| Uniform Delay, d1 | 31.8 | 21.8 | | 59.0 | 44.5 | 39.5 | | 44.7 | 40.4 | 60.0 | | 57.4 |
| Progression Factor | 0.92 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.95 | 1.01 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.0 | | 15.7 | 5.0 | 2.6 | | 2.4 | 0.3 | 41.0 | | 0.4 |
| Delay (s) | 29.8 | 4.6 | | 74.8 | 49.4 | 42.1 | | 44.6 | 41.2 | 100.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 10.8 | | | 48.6 | | | 44.2 | | | 82.2 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.3 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | 18.0 | | | |
| Intersection Capacity Utilization | | | 67.2% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 859 | 160 | 90 | 724 | 0 | 74 | 0 | 79 | 9 | 14 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1648 | 3149 | | 1387 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.21 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 358 | 3149 | | 1085 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 895 | 167 | 94 | 754 | 0 | 77 | 0 | 82 | 9 | 15 | 7 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1047 | 0 | 94 | 754 | 0 | 77 | 0 | 26 | 9 | 17 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 215 | 1889 | | 347 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | c0.35 | | | 0.24 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.26 | | | c0.07 | | 0.02 | | 0.00 | |
| v/c Ratio | | 0.58 | | 0.44 | 0.40 | | 0.22 | | 0.06 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 12.3 | | 10.8 | 10.5 | | 24.9 | | 23.5 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.4 | | 6.3 | 0.6 | | 1.5 | | 0.2 | | 0.0 | 0.1 |
| Delay (s) | | 13.7 | | 17.2 | 11.2 | | 26.4 | | 23.8 | | 23.3 | 23.4 |
| Level of Service | | B | | B | B | | C | | C | | C | C |
| Approach Delay (s) | | 13.7 | | | 11.8 | | | 25.0 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street

1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|-------|-------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↰↰↰ | | | ↰↰↰ | |
| Volume (vph) | 0 | 0 | 0 | 254 | 0 | 1043 | 203 | 645 | 0 | 0 | 785 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 0 | 0 | 0 | 262 | 0 | 1075 | 209 | 665 | 0 | 0 | 809 | 505 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 262 | 0 | 1075 | 209 | 665 | 0 | 0 | 1314 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1260 | |
| v/s Ratio Prot | | | | 0.17 | | c0.70 | c0.14 | 0.15 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.58 | | 2.46 | 0.45 | 0.24 | | | 1.17dr | |
| Uniform Delay, d1 | | | | 31.4 | | 37.5 | 29.4 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.62 | 2.01 | | | 1.00 | |
| Incremental Delay, d2 | | | | 5.2 | | 663.8 | 2.6 | 0.2 | | | 37.3 | |
| Delay (s) | | | | 36.6 | | 701.3 | 20.8 | 17.4 | | | 74.3 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 571.1 | | | 18.2 | | | 74.3 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 248.8 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 89.2% | | | ICU Level of Service | | E | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 331 | 770 | 144 | 0 | 0 | 0 | 0 | 517 | 375 | 343 | 696 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 348 | 811 | 152 | 0 | 0 | 0 | 0 | 544 | 395 | 361 | 733 | 0 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 313 | 985 | 0 | 0 | 0 | 0 | 0 | 544 | 395 | 361 | 733 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.12 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.21 | 0.31 | | | | | | | c0.18 | | | |
| v/c Ratio | 0.64 | 0.96 | | | | | | 0.47 | 0.66 | 0.76 | 0.27 | |
| Uniform Delay, d1 | 30.3 | 34.9 | | | | | | 32.2 | 34.3 | 33.7 | 10.4 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.84 | 0.16 | |
| Incremental Delay, d2 | 6.3 | 20.7 | | | | | | 1.2 | 5.2 | 4.7 | 0.1 | |
| Delay (s) | 36.6 | 55.6 | | | | | | 38.0 | 44.4 | 33.1 | 1.8 | |
| Level of Service | D | E | | | | | | D | D | C | A | |
| Approach Delay (s) | | 51.1 | | | 0.0 | | | 40.7 | | | 12.1 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.4 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 89.2% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 274 | 24 | 23 | 9 | 114 | 0 | 0 | 137 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3133 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.56 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3133 | | 1011 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 288 | 25 | 24 | 9 | 120 | 0 | 0 | 144 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 288 | 33 | 0 | 9 | 120 | 0 | 0 | 148 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 652 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.07 | | | c0.08 | |
| v/s Ratio Perm | | | | c0.17 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.54 | 0.03 | | 0.01 | 0.11 | | | 0.14 | |
| Uniform Delay, d1 | | | | 23.9 | 20.0 | | 10.2 | 7.7 | | | 9.7 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.07 | 1.16 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.8 | 0.1 | | 0.0 | 0.2 | | | 0.3 | |
| Delay (s) | | | | 27.7 | 20.1 | | 10.9 | 9.1 | | | 10.0 | |
| Level of Service | | | | C | C | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 26.6 | | | 9.3 | | | 10.0 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 1.0 | | | |
| Intersection Capacity Utilization | | | 36.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 12 | 11 | 22 | 3 | 0 | 14 | 0 | 97 | 26 | 44 | 367 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.89 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1739 | | | 1550 | | | 1723 | | 1589 | 1860 | |
| Flt Permitted | 0.75 | 1.00 | | | 0.98 | | | 1.00 | | 0.65 | 1.00 | |
| Satd. Flow (perm) | 1517 | 1739 | | | 1533 | | | 1723 | | 1094 | 1860 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 14 | 13 | 25 | 3 | 0 | 16 | 0 | 111 | 30 | 51 | 422 | 0 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 11 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 14 | 21 | 0 | 0 | 8 | 0 | 0 | 129 | 0 | 51 | 422 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | | | | pm+pt | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 552 | | | 487 | | | 811 | | 684 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.08 | | 0.01 | c0.23 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.16 | | 0.07 | 0.39 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 12.9 | | 7.9 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.97 | 0.86 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.4 | | 0.2 | 1.0 | |
| Delay (s) | 20.1 | 20.2 | | | 20.0 | | | 13.3 | | 7.9 | 9.0 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 13.3 | | | 8.9 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 40.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 37 | 32 | 8 | 149 | 222 | 22 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1753 | | 1765 | 1782 | 1656 | |
| Flt Permitted | 0.97 | | 0.55 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1753 | | 1017 | 1782 | 1656 | |
| Peak-hour factor, PHF | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Adj. Flow (vph) | 46 | 40 | 10 | 184 | 274 | 27 |
| RTOR Reduction (vph) | 27 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 59 | 0 | 10 | 184 | 296 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 563 | 987 | 917 | |
| v/s Ratio Prot | c0.03 | | | 0.10 | c0.18 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.10 | | 0.02 | 0.19 | 0.32 | |
| Uniform Delay, d1 | 15.4 | | 6.5 | 7.2 | 7.9 | |
| Progression Factor | 1.00 | | 0.46 | 0.58 | 1.46 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.4 | 0.8 | |
| Delay (s) | 15.8 | | 3.0 | 4.6 | 12.3 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.8 | | | 4.5 | 12.3 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.24 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 24.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 29 | 256 | 9 | 253 | 120 | 0 | 0 | 256 | 16 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.52 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 922 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 31 | 269 | 9 | 266 | 126 | 0 | 0 | 269 | 17 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 306 | 0 | 266 | 126 | 0 | 0 | 269 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 644 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.08 | | c0.05 | 0.08 | | | 0.15 | |
| v/s Ratio Perm | | | | | | | c0.20 | | | | | 0.01 |
| v/c Ratio | | | | | 0.27 | | 0.41 | 0.13 | | | 0.35 | 0.01 |
| Uniform Delay, d1 | | | | | 22.3 | | 12.1 | 7.4 | | | 15.4 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.0 | 0.3 | | | 1.2 | 0.0 |
| Delay (s) | | | | | 22.8 | | 14.1 | 7.6 | | | 16.6 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 22.8 | | | 12.0 | | | 16.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.7 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.4% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 203 | 30 | 59 | 702 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3286 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.23 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 408 | 3286 | | 1048 | 3467 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 112 | 111 | 45 | 156 | 239 | 35 | 69 | 826 | 52 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 258 | 0 | 156 | 259 | 0 | 69 | 872 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 345 | 1490 | | 634 | 1572 | |
| v/s Ratio Prot | | | | | c0.14 | | c0.04 | 0.08 | | 0.01 | c0.25 | |
| v/s Ratio Perm | | | | | | | 0.21 | | | 0.05 | | |
| v/c Ratio | | | | | 0.44 | | 0.45 | 0.17 | | 0.11 | 0.55 | |
| Uniform Delay, d1 | | | | | 20.9 | | 17.8 | 12.2 | | 8.2 | 15.0 | |
| Progression Factor | | | | | 1.00 | | 0.81 | 0.81 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.5 | | 4.2 | 0.3 | | 0.3 | 1.4 | |
| Delay (s) | | | | | 23.3 | | 18.6 | 10.1 | | 8.6 | 16.4 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 23.3 | | | 13.2 | | | 15.8 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↔ | ↔ | | ↔ | ↔ | |
| Volume (vph) | 32 | 49 | 12 | 8 | 63 | 63 | 5 | 271 | 20 | 159 | 588 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1966 | | | 1654 | | 1596 | 3177 | | 1704 | 3232 | |
| Flt Permitted | | 0.88 | | | 0.99 | | 0.33 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | | 1761 | | | 1638 | | 552 | 3177 | | 987 | 3232 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 37 | 56 | 14 | 9 | 72 | 72 | 6 | 311 | 23 | 183 | 676 | 57 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 43 | 0 | 0 | 7 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 100 | 0 | 0 | 110 | 0 | 6 | 327 | 0 | 183 | 725 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 587 | | | 546 | | 309 | 1779 | | 553 | 1810 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.22 | |
| v/s Ratio Perm | | 0.06 | | | c0.07 | | 0.01 | | | 0.19 | | |
| v/c Ratio | | 0.17 | | | 0.20 | | 0.02 | 0.18 | | 0.33 | 0.40 | |
| Uniform Delay, d1 | | 17.7 | | | 17.9 | | 7.3 | 8.1 | | 8.9 | 9.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.26 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.8 | | 0.1 | 0.2 | | 1.4 | 0.6 | |
| Delay (s) | | 18.3 | | | 18.7 | | 7.5 | 8.3 | | 3.7 | 2.9 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.3 | | | 18.7 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.9 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 49.2% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 29 | 148 | 52 | 192 | 452 | 63 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 31 | 159 | 56 | 206 | 486 | 68 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 190 | 125 | 138 | 324 | 230 | |
| Volume Left (vph) | 31 | 56 | 0 | 0 | 0 | |
| Volume Right (vph) | 159 | 0 | 0 | 0 | 68 | |
| Hadj (s) | -0.42 | 0.28 | 0.05 | 0.05 | -0.16 | |
| Departure Headway (s) | 5.2 | 5.9 | 5.7 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.28 | 0.21 | 0.22 | 0.49 | 0.33 | |
| Capacity (veh/h) | 637 | 580 | 602 | 647 | 672 | |
| Control Delay (s) | 10.2 | 9.3 | 9.1 | 12.2 | 9.5 | |
| Approach Delay (s) | 10.2 | 9.2 | | 11.1 | | |
| Approach LOS | B | A | | B | | |
| Intersection Summary | | | | | | |
| Delay | | | 10.4 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 43.8% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 371 | 18 | 18 | 367 | 63 | 71 | 53 | 66 | 341 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1611 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3252 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.51 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 925 | 1731 | 1421 | | | 257 | 3252 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 37 | 40 | 426 | 21 | 21 | 422 | 72 | 82 | 61 | 76 | 392 | 34 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 39 | 0 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 77 | 426 | 9 | 21 | 422 | 115 | 0 | 0 | 137 | 420 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 302 | 725 | 641 | 220 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.25 | | | c0.24 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.08 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.59 | 0.01 | 0.10 | 1.02 | 0.34 | | | 1.99 | 0.48 | |
| Uniform Delay, d1 | | 21.5 | 23.5 | 17.8 | 31.2 | 40.0 | 33.2 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.0 | 3.5 | 0.0 | 0.9 | 50.7 | 2.7 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.5 | 27.0 | 17.9 | 32.0 | 90.7 | 35.9 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 26.1 | | | 74.5 | | | | | 154.8 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 116.7 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 94.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 95 | 515 | 74 | 93 | 4 | 95 | 515 | 167 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3245 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 675 | 3245 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 109 | 592 | 85 | 107 | 5 | 109 | 592 | 192 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 109 | 772 | 0 | 0 | 0 | 114 | 758 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 177 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.24 | | | | 0.07 | | |
| v/s Ratio Perm | 0.16 | | | | | | c0.29 | |
| v/c Ratio | 0.62 | 0.91 | | | | 0.34 | 1.48 | |
| Uniform Delay, d1 | 34.1 | 37.5 | | | | 36.4 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 15.0 | 15.3 | | | | 2.8 | 224.2 | |
| Delay (s) | 49.1 | 52.8 | | | | 39.2 | 266.5 | |
| Level of Service | D | D | | | | D | F | |
| Approach Delay (s) | | 52.4 | | | | 237.6 | | |
| Approach LOS | | D | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 532 | 0 | 0 | 403 | 45 | 77 | 47 | 16 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1954 | | | 1842 | | | | |
| Flt Permitted | | 0.92 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1557 | | | 1954 | | | 1842 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 63 | 572 | 0 | 0 | 433 | 48 | 83 | 51 | 17 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 635 | 0 | 0 | 481 | 0 | 0 | 151 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 958 | | | 1202 | | | 482 | | | | |
| v/s Ratio Prot | | | | | 0.25 | | | | | | | |
| v/s Ratio Perm | | 0.41 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.66 | | | 0.40 | | | 0.31 | | | | |
| Uniform Delay, d1 | | 8.1 | | | 6.4 | | | 19.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.6 | | | 1.0 | | | 1.7 | | | | |
| Delay (s) | | 11.7 | | | 7.4 | | | 21.0 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 11.7 | | | 7.4 | | | 21.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.56 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 76.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 64 | 294 | 137 | 103 | 270 | 110 | 95 | 576 | 76 | 131 | 723 | 90 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1981 | 1434 | | 1944 | 1444 | 1546 | 3040 | 1296 | 1505 | 3069 | 1252 |
| Flt Permitted | | 0.54 | 1.00 | | 0.78 | 1.00 | 0.24 | 1.00 | 1.00 | 0.32 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1077 | 1434 | | 1541 | 1444 | 391 | 3040 | 1296 | 503 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 69 | 316 | 147 | 111 | 290 | 118 | 102 | 619 | 82 | 141 | 777 | 97 |
| RTOR Reduction (vph) | 0 | 0 | 87 | 0 | 0 | 84 | 0 | 0 | 49 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 0 | 385 | 60 | 0 | 401 | 34 | 102 | 619 | 33 | 141 | 777 | 47 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.4 | 42.4 | 51.4 | 42.8 | 42.8 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.4 | 42.4 | 51.4 | 42.8 | 42.8 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 527 | 587 | | 440 | 413 | 279 | 1228 | 523 | 328 | 1251 | 510 |
| v/s Ratio Prot | | c0.07 | | | | | 0.03 | 0.20 | | c0.04 | c0.25 | |
| v/s Ratio Perm | | 0.23 | 0.04 | | c0.26 | 0.02 | 0.15 | | 0.03 | 0.18 | | 0.04 |
| v/c Ratio | | 0.73 | 0.10 | | 0.91 | 0.08 | 0.37 | 0.50 | 0.06 | 0.43 | 0.62 | 0.09 |
| Uniform Delay, d1 | | 26.1 | 19.1 | | 36.2 | 27.4 | 16.2 | 23.4 | 19.2 | 15.7 | 24.7 | 19.1 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.79 | 1.58 | 2.83 |
| Incremental Delay, d2 | | 8.6 | 0.4 | | 25.6 | 0.4 | 0.8 | 1.5 | 0.2 | 0.9 | 2.2 | 0.3 |
| Delay (s) | | 34.8 | 19.5 | | 61.8 | 27.8 | 17.0 | 24.9 | 19.4 | 29.0 | 41.2 | 54.4 |
| Level of Service | | C | B | | E | C | B | C | B | C | D | D |
| Approach Delay (s) | | 30.5 | | | 54.1 | | | 23.3 | | | 40.8 | |
| Approach LOS | | C | | | D | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.4 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 81.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 74 | 347 | 74 | 78 | 367 | 78 | 44 | 52 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1643 | | | 1643 | | | 1798 | | | | |
| Flt Permitted | | 0.86 | | | 0.87 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1430 | | | 1437 | | | 1798 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 80 | 373 | 80 | 84 | 395 | 84 | 47 | 56 | 63 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 523 | 0 | 0 | 553 | 0 | 0 | 132 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 880 | | | 884 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.37 | | | 0.38 | | | 0.07 | | | | |
| v/c Ratio | | 0.59 | | | 0.63 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 7.6 | | | 7.8 | | | 19.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.0 | | | 3.3 | | | 1.5 | | | | |
| Delay (s) | | 10.5 | | | 11.2 | | | 20.6 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 10.5 | | | 11.2 | | | 20.6 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 19 | 382 | 64 | 66 | 441 | 32 | 37 | 76 | 72 | 51 | 225 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1685 | 1455 | | 1886 | |
| Flt Permitted | | 0.97 | 1.00 | | 0.90 | 1.00 | | 0.85 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1641 | 1382 | | 1558 | 1417 | | 1449 | 1455 | | 1781 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 20 | 402 | 67 | 69 | 464 | 34 | 39 | 80 | 76 | 54 | 237 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 422 | 38 | 0 | 533 | 22 | 0 | 119 | 24 | 0 | 331 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 941 | 792 | | 893 | 812 | | 464 | 466 | | 570 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | 0.03 | | 0.34 | 0.02 | | 0.08 | 0.02 | | 0.19 | |
| v/c Ratio | | 0.45 | 0.05 | | 0.60 | 0.03 | | 0.26 | 0.05 | | 0.58 | |
| Uniform Delay, d1 | | 9.2 | 7.0 | | 10.4 | 6.9 | | 18.9 | 17.6 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | 0.1 | | 2.9 | 0.1 | | 1.3 | 0.2 | | 4.3 | |
| Delay (s) | | 10.7 | 7.1 | | 13.3 | 7.0 | | 20.2 | 17.8 | | 25.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 10.2 | | | 12.9 | | | 19.3 | | | 25.6 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 86.1% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 55 | 426 | 29 | 39 | 453 | 47 | 44 | 165 | 55 | 95 | 162 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1526 | 3067 | | 1651 | 3728 | | 1584 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.42 | 1.00 | | 0.45 | 1.00 | | 0.65 | 1.00 | 1.00 | 0.64 | 1.00 | 1.00 |
| Satd. Flow (perm) | 677 | 3067 | | 785 | 3728 | | 1076 | 1663 | 1370 | 1057 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 59 | 453 | 31 | 41 | 482 | 50 | 47 | 176 | 59 | 101 | 172 | 27 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 35 | 0 | 0 | 16 |
| Lane Group Flow (vph) | 59 | 476 | 0 | 41 | 520 | 0 | 47 | 176 | 24 | 101 | 172 | 11 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 323 | 1463 | | 374 | 1778 | | 430 | 665 | 548 | 423 | 672 | 559 |
| v/s Ratio Prot | | c0.16 | | | 0.14 | | | c0.11 | | | 0.10 | |
| v/s Ratio Perm | 0.09 | | | 0.05 | | | 0.04 | | 0.02 | 0.10 | | 0.01 |
| v/c Ratio | 0.18 | 0.33 | | 0.11 | 0.29 | | 0.11 | 0.26 | 0.04 | 0.24 | 0.26 | 0.02 |
| Uniform Delay, d1 | 9.7 | 10.5 | | 9.4 | 10.3 | | 12.2 | 13.1 | 11.9 | 12.9 | 13.0 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.88 | 0.94 | 0.88 | 0.54 | 0.54 | 0.29 |
| Incremental Delay, d2 | 1.2 | 0.6 | | 0.6 | 0.4 | | 0.5 | 1.0 | 0.1 | 1.3 | 0.9 | 0.1 |
| Delay (s) | 11.0 | 11.1 | | 10.0 | 10.8 | | 11.3 | 13.3 | 10.6 | 8.3 | 8.0 | 3.4 |
| Level of Service | B | B | | A | B | | B | B | B | A | A | A |
| Approach Delay (s) | | 11.1 | | | 10.7 | | | 12.4 | | | 7.7 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 50.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 389 | 71 | 58 | 305 | 53 | 54 | 175 | 63 | 81 | 223 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.95 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1319 | 3143 | | 1513 | 3125 | | 1579 | 2917 | | 1451 | 3002 | |
| Flt Permitted | 0.52 | 1.00 | | 0.45 | 1.00 | | 0.56 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 724 | 3143 | | 717 | 3125 | | 935 | 2917 | | 916 | 3002 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 52 | 401 | 73 | 60 | 314 | 55 | 56 | 180 | 65 | 84 | 230 | 72 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 52 | 474 | 0 | 60 | 369 | 0 | 56 | 207 | 0 | 84 | 262 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 348 | 1509 | | 344 | 1500 | | 386 | 1206 | | 379 | 1241 | |
| v/s Ratio Prot | c0.15 | | | 0.12 | | | 0.07 | | | 0.09 | | |
| v/s Ratio Perm | 0.07 | | | 0.08 | | | 0.06 | | | c0.09 | | |
| v/c Ratio | 0.15 | 0.31 | | 0.17 | 0.25 | | 0.15 | 0.17 | | 0.22 | 0.21 | |
| Uniform Delay, d1 | 10.9 | 11.9 | | 11.1 | 11.5 | | 13.7 | 13.9 | | 14.2 | 14.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.5 | | 1.1 | 0.4 | | 0.8 | 0.3 | | 1.3 | 0.4 | |
| Delay (s) | 11.8 | 12.5 | | 12.2 | 11.9 | | 14.5 | 14.2 | | 15.6 | 14.5 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.4 | | | 11.9 | | | 14.3 | | | 14.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.27 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 49.5% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 78 | 382 | 52 | 27 | 433 | 40 | 68 | 163 | 48 | 76 | 473 | 106 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1594 | 1654 | | 1362 | 1973 | | 1534 | 2997 | | 1534 | 3015 | |
| Flt Permitted | 0.34 | 1.00 | | 0.39 | 1.00 | | 0.28 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 577 | 1654 | | 554 | 1973 | | 446 | 2997 | | 989 | 3015 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 82 | 402 | 55 | 28 | 456 | 42 | 72 | 172 | 51 | 80 | 498 | 112 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 82 | 457 | 0 | 28 | 498 | 0 | 72 | 223 | 0 | 80 | 610 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.4 | 41.2 | | 40.0 | 38.0 | | 25.8 | 21.2 | | 25.8 | 21.2 | |
| Effective Green, g (s) | 46.4 | 39.2 | | 40.0 | 36.0 | | 25.8 | 19.2 | | 25.8 | 19.2 | |
| Actuated g/C Ratio | 0.55 | 0.46 | | 0.47 | 0.42 | | 0.30 | 0.23 | | 0.30 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 377 | 763 | | 280 | 836 | | 194 | 677 | | 330 | 681 | |
| v/s Ratio Prot | c0.01 | c0.28 | | 0.00 | 0.25 | | c0.02 | 0.07 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.11 | | | 0.04 | | | 0.09 | | | 0.06 | | |
| v/c Ratio | 0.22 | 0.60 | | 0.10 | 0.60 | | 0.37 | 0.33 | | 0.24 | 0.90 | |
| Uniform Delay, d1 | 16.6 | 17.0 | | 17.6 | 18.9 | | 29.1 | 27.5 | | 22.4 | 31.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 3.5 | | 0.2 | 3.1 | | 1.2 | 1.3 | | 0.4 | 16.7 | |
| Delay (s) | 16.9 | 20.5 | | 17.7 | 22.0 | | 30.3 | 28.8 | | 22.8 | 48.7 | |
| Level of Service | B | C | | B | C | | C | C | | C | D | |
| Approach Delay (s) | | 20.0 | | | 21.8 | | | 29.2 | | | 45.7 | |
| Approach LOS | | B | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 20.0 | | | |
| Intersection Capacity Utilization | | | 71.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 62 | 327 | 53 | 90 | 391 | 91 | 51 | 122 | 45 | 98 | 283 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3130 | | 1652 | 3236 | | 1548 | 3026 | |
| Flt Permitted | | 0.80 | | | 0.80 | | 0.51 | 1.00 | | 0.64 | 1.00 | |
| Satd. Flow (perm) | | 2979 | | | 2521 | | 891 | 3236 | | 1041 | 3026 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 67 | 352 | 57 | 97 | 420 | 98 | 55 | 131 | 48 | 105 | 304 | 68 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 476 | 0 | 0 | 615 | 0 | 55 | 179 | 0 | 105 | 372 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1350 | | | 1143 | | 392 | 1424 | | 458 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.06 | | | c0.12 | |
| v/s Ratio Perm | | 0.16 | | | c0.24 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.35 | | | 0.54 | | 0.14 | 0.13 | | 0.23 | 0.28 | |
| Uniform Delay, d1 | | 13.3 | | | 14.8 | | 12.5 | 12.4 | | 13.1 | 13.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | | 1.8 | | 0.7 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 14.1 | | | 16.6 | | 13.3 | 12.6 | | 14.2 | 13.9 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.1 | | | 16.6 | | | 12.8 | | | 14.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.5% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 76 | 667 | 5 | 16 | 449 | 192 | 1 | 1 | 7 | 164 | 1 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1551 | | | 3175 | |
| Flt Permitted | 0.48 | 1.00 | | 0.36 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 804 | 3206 | | 622 | 3320 | 1485 | | 1523 | | | 2544 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 82 | 717 | 5 | 17 | 483 | 206 | 1 | 1 | 8 | 176 | 1 | 67 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 72 | 0 | 6 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 82 | 722 | 0 | 17 | 483 | 134 | 0 | 4 | 0 | 0 | 193 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 523 | 2086 | | 405 | 2160 | 966 | | 360 | | | 601 | |
| v/s Ratio Prot | c0.23 | | | 0.15 | | | | | | | | |
| v/s Ratio Perm | 0.10 | | | 0.03 | | 0.09 | | 0.00 | | | c0.08 | |
| v/c Ratio | 0.16 | 0.35 | | 0.04 | 0.22 | 0.14 | | 0.01 | | | 0.32 | |
| Uniform Delay, d1 | 4.8 | 5.6 | | 4.4 | 5.0 | 4.7 | | 20.7 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.5 | | 0.2 | 0.2 | 0.3 | | 0.1 | | | 1.3 | |
| Delay (s) | 5.4 | 6.0 | | 4.6 | 5.3 | 5.0 | | 20.7 | | | 23.6 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.0 | | | 5.2 | | | | 20.7 | | | 23.6 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.2 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.34 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 49.2% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 101 | 176 | 94 | 93 | 160 | 54 | 114 | 769 | 77 | 118 | 786 | 90 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1506 | | 1561 | 1586 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.46 | 1.00 | | 0.36 | 1.00 | | 0.22 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 |
| Satd. Flow (perm) | 761 | 1506 | | 587 | 1586 | | 347 | 3069 | 1337 | 368 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 106 | 185 | 99 | 98 | 168 | 57 | 120 | 809 | 81 | 124 | 827 | 95 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 14 | 0 | 0 | 0 | 40 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 106 | 261 | 0 | 98 | 211 | 0 | 120 | 809 | 41 | 124 | 827 | 49 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 289 | 390 | | 248 | 410 | | 244 | 1264 | 551 | 255 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.17 | | c0.03 | 0.13 | | c0.03 | 0.26 | | 0.03 | c0.27 | |
| v/s Ratio Perm | 0.09 | | | 0.09 | | | 0.20 | | 0.03 | 0.19 | | 0.04 |
| v/c Ratio | 0.37 | 0.67 | | 0.40 | 0.51 | | 0.49 | 0.64 | 0.07 | 0.49 | 0.65 | 0.09 |
| Uniform Delay, d1 | 22.1 | 28.2 | | 22.2 | 26.9 | | 14.0 | 20.0 | 15.2 | 14.0 | 20.1 | 15.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.79 | 0.57 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.6 | 8.8 | | 4.7 | 4.6 | | 6.7 | 2.4 | 0.3 | 6.5 | 2.6 | 0.3 |
| Delay (s) | 25.7 | 37.1 | | 26.9 | 31.5 | | 15.4 | 18.1 | 8.8 | 20.5 | 22.6 | 15.6 |
| Level of Service | C | D | | C | C | | B | B | A | C | C | B |
| Approach Delay (s) | | 34.0 | | | 30.1 | | | 17.1 | | | 21.7 | |
| Approach LOS | | C | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 64.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 21 | 173 | 33 | 20 | 173 | 20 | 18 | 115 | 31 | 35 | 239 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1840 | | | 1852 | | | 1938 | | | 1976 | |
| Flt Permitted | | 0.97 | | | 0.97 | | | 0.95 | | | 0.96 | |
| Satd. Flow (perm) | | 1786 | | | 1795 | | | 1858 | | | 1905 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 22 | 184 | 35 | 21 | 184 | 21 | 19 | 122 | 33 | 37 | 254 | 50 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 232 | 0 | 0 | 220 | 0 | 0 | 161 | 0 | 0 | 331 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 742 | | | 746 | | | 858 | | | 879 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.09 | | | c0.17 | |
| v/c Ratio | | 0.31 | | | 0.30 | | | 0.19 | | | 0.38 | |
| Uniform Delay, d1 | | 12.8 | | | 12.7 | | | 10.3 | | | 11.4 | |
| Progression Factor | | 1.00 | | | 0.60 | | | 1.20 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.5 | | | 1.2 | |
| Delay (s) | | 13.9 | | | 8.6 | | | 12.9 | | | 12.6 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 13.9 | | | 8.6 | | | 12.9 | | | 12.6 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.35 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.6% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 23 | 179 | 34 | 25 | 179 | 18 | 38 | 195 | 31 | 33 | 180 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3063 | | 1576 | 3121 | | 1518 | 3117 | | 1550 | 3075 | |
| Flt Permitted | 0.62 | 1.00 | | 0.61 | 1.00 | | 0.61 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 970 | 3063 | | 1005 | 3121 | | 968 | 3117 | | 975 | 3075 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 25 | 197 | 37 | 27 | 197 | 20 | 42 | 214 | 34 | 36 | 198 | 36 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 25 | 210 | 0 | 27 | 205 | 0 | 42 | 234 | 0 | 36 | 219 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 284 | 895 | | 294 | 912 | | 566 | 1822 | | 570 | 1798 | |
| v/s Ratio Prot | c0.07 | | | 0.07 | | | c0.08 | | | 0.07 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.04 | | | 0.04 | | |
| v/c Ratio | 0.09 | 0.23 | | 0.09 | 0.22 | | 0.07 | 0.13 | | 0.06 | 0.12 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.7 | 17.4 | | 5.9 | 6.1 | | 5.8 | 6.0 | |
| Progression Factor | 0.86 | 0.87 | | 0.83 | 0.83 | | 1.14 | 1.11 | | 0.48 | 0.45 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.6 | 0.6 | | 0.3 | 0.1 | | 0.2 | 0.1 | |
| Delay (s) | 15.0 | 15.8 | | 14.5 | 15.0 | | 6.9 | 6.9 | | 3.0 | 2.9 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 15.7 | | | 15.0 | | | 6.9 | | | 2.9 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.9 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.16 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 61 | 153 | 38 | 21 | 132 | 30 | 23 | 238 | 16 | 30 | 316 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1554 | 3057 | | 1524 | 2940 | | | 1923 | | | 1938 | |
| Flt Permitted | 0.65 | 1.00 | | 0.63 | 1.00 | | | 0.96 | | | 0.96 | |
| Satd. Flow (perm) | 1058 | 3057 | | 1009 | 2940 | | | 1851 | | | 1874 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 62 | 156 | 39 | 21 | 135 | 31 | 23 | 243 | 16 | 31 | 322 | 34 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 19 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 62 | 172 | 0 | 21 | 147 | 0 | 0 | 279 | 0 | 0 | 382 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 423 | 1223 | | 404 | 1176 | | | 883 | | | 894 | |
| v/s Ratio Prot | 0.06 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | c0.06 | | | 0.02 | | | 0.15 | | | c0.20 | | |
| v/c Ratio | 0.15 | 0.14 | | 0.05 | 0.13 | | | 0.32 | | | 0.43 | |
| Uniform Delay, d1 | 12.4 | 12.4 | | 11.9 | 12.3 | | | 10.5 | | | 11.2 | |
| Progression Factor | 0.98 | 0.91 | | 0.78 | 0.77 | | | 0.95 | | | 1.00 | |
| Incremental Delay, d2 | 0.7 | 0.2 | | 0.2 | 0.2 | | | 0.9 | | | 1.5 | |
| Delay (s) | 12.9 | 11.5 | | 9.5 | 9.7 | | | 10.8 | | | 12.7 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 11.8 | | | 9.7 | | | 10.8 | | | 12.7 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 54.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 47 | 111 | 26 | 16 | 124 | 20 | 28 | 212 | 10 | 28 | 347 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1974 | | 1584 | 1977 | | | 1982 | | | 1979 | |
| Flt Permitted | 0.63 | 1.00 | | 0.64 | 1.00 | | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | 1099 | 1974 | | 1074 | 1977 | | | 1848 | | | 1924 | |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Adj. Flow (vph) | 55 | 129 | 30 | 19 | 144 | 23 | 33 | 247 | 12 | 33 | 403 | 64 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 55 | 159 | 0 | 19 | 167 | 0 | 0 | 292 | 0 | 0 | 500 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 338 | 607 | | 330 | 608 | | | 1052 | | | 1095 | |
| v/s Ratio Prot | | 0.08 | | | c0.08 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.16 | | | c0.26 | |
| v/c Ratio | 0.16 | 0.26 | | 0.06 | 0.27 | | | 0.28 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.0 | | | 7.2 | | | 8.1 | |
| Progression Factor | 0.79 | 0.78 | | 0.92 | 0.91 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 1.0 | | 0.3 | 1.1 | | | 0.7 | | | 1.4 | |
| Delay (s) | 14.0 | 14.3 | | 15.0 | 16.6 | | | 7.7 | | | 9.5 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.2 | | | 16.4 | | | 7.7 | | | 9.5 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

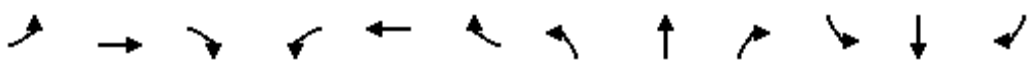
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 42 | 10 | 74 | 2 | 4 | 7 | 45 | 181 | 4 | 3 | 359 | 59 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1819 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.70 | 1.00 | | 0.47 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1336 | 1727 | | 1246 | 1819 | | 795 | 1647 | 1428 | 1094 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 48 | 11 | 84 | 2 | 5 | 8 | 51 | 206 | 5 | 3 | 408 | 67 |
| RTOR Reduction (vph) | 0 | 61 | 0 | 0 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 48 | 34 | 0 | 2 | 7 | 0 | 51 | 206 | 3 | 3 | 408 | 40 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 370 | 478 | | 345 | 504 | | 477 | 988 | 857 | 656 | 1200 | 898 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | 0.13 | | | c0.20 | |
| v/s Ratio Perm | c0.04 | | | 0.00 | | | 0.06 | | 0.00 | 0.00 | | 0.03 |
| v/c Ratio | 0.13 | 0.07 | | 0.01 | 0.01 | | 0.11 | 0.21 | 0.00 | 0.00 | 0.34 | 0.04 |
| Uniform Delay, d1 | 17.6 | 17.3 | | 17.0 | 17.1 | | 5.6 | 5.9 | 5.2 | 5.2 | 6.5 | 5.3 |
| Progression Factor | 1.44 | 2.79 | | 1.00 | 1.00 | | 0.69 | 0.66 | 0.67 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.3 | | 0.0 | 0.1 | | 0.4 | 0.4 | 0.0 | 0.0 | 0.8 | 0.1 |
| Delay (s) | 26.0 | 48.7 | | 17.1 | 17.1 | | 4.2 | 4.3 | 3.5 | 5.2 | 7.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 41.1 | | | 17.1 | | | 4.3 | | | 7.0 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 46.6% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue








1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 251 | 163 | 154 | 191 | 0 | 0 | 0 | 0 | 109 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2904 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.40 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2904 | | 719 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 0 | 267 | 173 | 164 | 203 | 0 | 0 | 0 | 0 | 116 | 500 | 401 |
| RTOR Reduction (vph) | 0 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 337 | 0 | 164 | 203 | 0 | 0 | 0 | 0 | 116 | 760 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 565 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.06 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.09 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.29 | 0.11 | | | | | 0.21 | 0.69 | |
| Uniform Delay, d1 | | 26.4 | | 13.3 | 11.1 | | | | | 22.4 | 27.7 | |
| Progression Factor | | 1.00 | | 2.23 | 2.17 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.1 | 0.1 | | | | | 0.9 | 3.6 | |
| Delay (s) | | 27.5 | | 30.7 | 24.1 | | | | | 23.3 | 31.3 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.5 | | | 27.1 | | | 0.0 | | | 30.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 59.7% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|---|---|---|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 219 | 0 | 0 | 284 | 109 | 61 | 415 | 175 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 637 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 157 | 243 | 0 | 0 | 316 | 121 | 68 | 461 | 194 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 137 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 157 | 243 | 0 | 0 | 398 | 0 | 68 | 461 | 57 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 704 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.08 | | | c0.14 | | 0.04 | c0.26 | | | | |
| v/s Ratio Perm | 0.06 | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.22 | 0.12 | | | 0.55 | | 0.13 | 0.88 | 0.12 | | | |
| Uniform Delay, d1 | 10.3 | 8.1 | | | 32.9 | | 26.4 | 34.3 | 26.4 | | | |
| Progression Factor | 0.44 | 0.45 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.1 | | | 3.0 | | 0.5 | 18.7 | 0.6 | | | |
| Delay (s) | 5.3 | 3.8 | | | 35.9 | | 26.9 | 53.0 | 26.9 | | | |
| Level of Service | A | A | | | D | | C | D | C | | | |
| Approach Delay (s) | | 4.3 | | | 35.9 | | | 43.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 59.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 391 | 369 | 63 | 411 | 0 | 0 | 0 | 0 | 9 | 432 | 269 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3096 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3096 | | 318 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 434 | 410 | 70 | 457 | 0 | 0 | 0 | 0 | 10 | 480 | 299 |
| RTOR Reduction (vph) | 0 | 172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 197 |
| Lane Group Flow (vph) | 0 | 672 | 0 | 70 | 457 | 0 | 0 | 0 | 0 | 10 | 480 | 102 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 422 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.22 | | 0.03 | c0.14 | | | | | 0.01 | c0.15 | 0.07 |
| v/s Ratio Perm | | | | 0.06 | | | | | | | | |
| v/c Ratio | | 0.60 | | 0.17 | 0.24 | | | | | 0.02 | 0.44 | 0.20 |
| Uniform Delay, d1 | | 26.2 | | 12.7 | 10.2 | | | | | 21.9 | 25.6 | 23.3 |
| Progression Factor | | 1.00 | | 1.05 | 1.25 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.4 | | 0.7 | 0.3 | | | | | 0.1 | 1.3 | 0.8 |
| Delay (s) | | 28.6 | | 14.0 | 13.0 | | | | | 22.0 | 26.9 | 24.2 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 28.6 | | | 13.1 | | | 0.0 | | | 25.8 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 51.3% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 320 | 80 | 0 | 0 | 116 | 4 | 358 | 369 | 45 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3173 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.67 | 0.73 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1039 | 2346 | | | 3173 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 337 | 84 | 0 | 0 | 122 | 4 | 377 | 388 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 168 | 253 | 0 | 0 | 123 | 0 | 377 | 388 | 17 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 685 | 1471 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.09 | 0.06 | | | c0.04 | | c0.24 | 0.23 | 0.01 | | | |
| v/s Ratio Perm | 0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.25 | 0.17 | | | 0.26 | | 0.66 | 0.63 | 0.03 | | | |
| Uniform Delay, d1 | 13.6 | 13.2 | | | 37.6 | | 26.2 | 25.9 | 20.1 | | | |
| Progression Factor | 0.29 | 0.31 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.3 | | 5.7 | 4.9 | 0.1 | | | |
| Delay (s) | 4.6 | 4.2 | | | 38.9 | | 31.9 | 30.9 | 20.2 | | | |
| Level of Service | A | A | | | D | | C | C | C | | | |
| Approach Delay (s) | | 4.4 | | | 38.9 | | | 30.8 | | | 0.0 | |
| Approach LOS | | A | | | D | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.3 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 51.3% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 76 | 205 | 100 | 90 | 198 | 91 | 65 | 538 | 59 | 96 | 842 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2934 | | | 2924 | | 1508 | 3069 | 1309 | 1507 | 3099 | 1298 |
| Flt Permitted | | 0.80 | | | 0.77 | | 0.18 | 1.00 | 1.00 | 0.35 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2384 | | | 2271 | | 291 | 3069 | 1309 | 562 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 78 | 211 | 103 | 93 | 204 | 94 | 67 | 555 | 61 | 99 | 868 | 64 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 36 | 0 | 0 | 0 | 37 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 350 | 0 | 0 | 355 | 0 | 67 | 555 | 24 | 99 | 868 | 31 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1049 | | | 748 | | 181 | 1210 | 508 | 282 | 1221 | 504 |
| v/s Ratio Prot | | c0.02 | | | | | c0.02 | 0.18 | | 0.02 | c0.28 | |
| v/s Ratio Perm | | 0.12 | | | c0.16 | | 0.14 | | 0.02 | 0.13 | | 0.02 |
| v/c Ratio | | 0.33 | | | 0.48 | | 0.37 | 0.46 | 0.05 | 0.35 | 0.71 | 0.06 |
| Uniform Delay, d1 | | 16.4 | | | 22.7 | | 16.1 | 19.0 | 16.2 | 15.4 | 21.7 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.05 | 0.70 | 0.47 | 1.09 | 1.19 | 1.91 |
| Incremental Delay, d2 | | 0.9 | | | 2.2 | | 5.5 | 1.2 | 0.2 | 2.7 | 2.8 | 0.2 |
| Delay (s) | | 17.3 | | | 24.8 | | 22.5 | 14.5 | 7.8 | 19.5 | 28.5 | 31.3 |
| Level of Service | | B | | | C | | C | B | A | B | C | C |
| Approach Delay (s) | | 17.3 | | | 24.8 | | | 14.7 | | | 27.8 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 68.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 305 | 0 | 0 | 278 | 69 | 47 | 39 | 30 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1730 | | | 1701 | | | 1653 | | | | |
| Flt Permitted | | 0.87 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1518 | | | 1701 | | | 1653 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 82 | 328 | 0 | 0 | 299 | 74 | 51 | 42 | 32 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 410 | 0 | 0 | 359 | 0 | 0 | 106 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 887 | | | 994 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.21 | | | | | | | |
| v/s Ratio Perm | | 0.27 | | | | | | 0.06 | | | | |
| v/c Ratio | | 0.46 | | | 0.36 | | | 0.22 | | | | |
| Uniform Delay, d1 | | 7.7 | | | 7.1 | | | 17.4 | | | | |
| Progression Factor | | 1.00 | | | 0.49 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.7 | | | 1.0 | | | 1.0 | | | | |
| Delay (s) | | 9.4 | | | 4.4 | | | 18.4 | | | | |
| Level of Service | | A | | | A | | | B | | | | |
| Approach Delay (s) | | 9.4 | | | 4.4 | | | 18.4 | | | 0.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 8.6 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.38 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 58.1% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 19 | 289 | 27 | 32 | 285 | 41 | 22 | 91 | 30 | 50 | 142 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1955 | | | 1938 | | | 2969 | | | 2985 | |
| Flt Permitted | | 0.97 | | | 0.95 | | | 0.90 | | | 0.87 | |
| Satd. Flow (perm) | | 1907 | | | 1852 | | | 2698 | | | 2637 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 20 | 307 | 29 | 34 | 303 | 44 | 23 | 97 | 32 | 53 | 151 | 43 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 19 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 0 | 351 | 0 | 0 | 374 | 0 | 0 | 133 | 0 | 0 | 222 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 880 | | | 855 | | | 1121 | | | 1095 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.18 | | | 0.20 | | | 0.05 | | | 0.08 | |
| v/c Ratio | | 0.40 | | | 0.44 | | | 0.12 | | | 0.20 | |
| Uniform Delay, d1 | | 11.6 | | | 11.8 | | | 11.7 | | | 12.1 | |
| Progression Factor | | 0.57 | | | 0.45 | | | 1.25 | | | 0.45 | |
| Incremental Delay, d2 | | 1.2 | | | 1.5 | | | 0.2 | | | 0.4 | |
| Delay (s) | | 7.8 | | | 6.9 | | | 14.8 | | | 5.8 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 7.8 | | | 6.9 | | | 14.8 | | | 5.8 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 8.0 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 66.6% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 255 | 39 | 66 | 362 | 70 | 42 | 211 | 95 | 64 | 175 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1507 | 3034 | | 1568 | 3074 | | 1586 | 2961 | | 1585 | 3075 | |
| Flt Permitted | 0.43 | 1.00 | | 0.55 | 1.00 | | 0.60 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | 680 | 3034 | | 914 | 3074 | | 1009 | 2961 | | 926 | 3075 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 44 | 271 | 41 | 70 | 385 | 74 | 45 | 224 | 101 | 68 | 186 | 51 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 24 | 0 | 0 | 47 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 44 | 293 | 0 | 70 | 435 | 0 | 45 | 278 | 0 | 68 | 213 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 230 | 1027 | | 309 | 1040 | | 543 | 1594 | | 499 | 1656 | |
| v/s Ratio Prot | | 0.10 | | | c0.14 | | | c0.09 | | | 0.07 | |
| v/s Ratio Perm | 0.06 | | | 0.08 | | | 0.04 | | | 0.07 | | |
| v/c Ratio | 0.19 | 0.29 | | 0.23 | 0.42 | | 0.08 | 0.17 | | 0.14 | 0.13 | |
| Uniform Delay, d1 | 15.2 | 15.7 | | 15.4 | 16.6 | | 7.2 | 7.6 | | 7.5 | 7.4 | |
| Progression Factor | 0.73 | 0.70 | | 0.95 | 0.96 | | 0.83 | 0.81 | | 1.13 | 1.14 | |
| Incremental Delay, d2 | 1.8 | 0.7 | | 1.7 | 1.2 | | 0.3 | 0.2 | | 0.6 | 0.2 | |
| Delay (s) | 12.8 | 11.8 | | 16.4 | 17.1 | | 6.3 | 6.5 | | 9.0 | 8.7 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 11.9 | | | 17.0 | | | 6.4 | | | 8.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 11.7 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.27 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 47.6% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 68 | 69 | 316 | 40 | 40 | 207 | 52 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1503 | 3014 | | 1429 | 3719 | | | 3486 | | | 3519 | |
| Flt Permitted | 0.52 | 1.00 | | 0.52 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 827 | 3014 | | 789 | 3719 | | | 3043 | | | 3131 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 59 | 305 | 72 | 73 | 336 | 43 | 43 | 220 | 55 | 49 | 297 | 68 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 15 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 59 | 345 | 0 | 73 | 364 | 0 | 0 | 291 | 0 | 0 | 389 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 394 | 1437 | | 376 | 1774 | | | 1217 | | | 1252 | |
| v/s Ratio Prot | | c0.11 | | | 0.10 | | | | | | | |
| v/s Ratio Perm | 0.07 | | | 0.09 | | | | 0.10 | | | c0.12 | |
| v/c Ratio | 0.15 | 0.24 | | 0.19 | 0.21 | | | 0.24 | | | 0.31 | |
| Uniform Delay, d1 | 9.6 | 10.0 | | 9.8 | 9.9 | | | 12.9 | | | 13.4 | |
| Progression Factor | 1.59 | 1.75 | | 1.18 | 1.18 | | | 0.46 | | | 0.68 | |
| Incremental Delay, d2 | 0.8 | 0.4 | | 1.1 | 0.2 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.0 | 17.9 | | 12.7 | 11.9 | | | 6.4 | | | 9.7 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 17.7 | | | 12.0 | | | 6.4 | | | 9.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  | |
| Volume (vph) | 82 | 246 | 82 | 73 | 220 | 73 | 100 | 70 | 40 | 40 | 70 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1669 | 1436 | | 3084 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.82 | 1.00 | | 0.82 | | | 0.75 | | | 0.91 | |
| Satd. Flow (perm) | | 1385 | 1436 | | 2565 | | | 1438 | | | 1679 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 88 | 265 | 88 | 78 | 237 | 78 | 108 | 75 | 43 | 43 | 75 | 108 |
| RTOR Reduction (vph) | 0 | 0 | 42 | 0 | 33 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 353 | 46 | 0 | 360 | 0 | 0 | 213 | 0 | 0 | 175 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 724 | 751 | | 1342 | | | 465 | | | 542 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.25 | 0.03 | | 0.14 | | | c0.15 | | | 0.10 | |
| v/c Ratio | | 0.49 | 0.06 | | 0.27 | | | 0.46 | | | 0.32 | |
| Uniform Delay, d1 | | 9.9 | 7.6 | | 8.6 | | | 17.5 | | | 16.6 | |
| Progression Factor | | 1.83 | 4.35 | | 0.56 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.3 | 0.2 | | 0.5 | | | 3.2 | | | 1.6 | |
| Delay (s) | | 20.5 | 33.4 | | 5.3 | | | 20.7 | | | 18.2 | |
| Level of Service | | C | C | | A | | | C | | | B | |
| Approach Delay (s) | | 23.1 | | | 5.3 | | | 20.7 | | | 18.2 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 68.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 45 | 253 | 18 | 22 | 262 | 50 | 22 | 119 | 42 | 61 | 142 | 60 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1440 | 3038 | | 1563 | 3017 | | | 3580 | | | 3601 | |
| Flt Permitted | 0.55 | 1.00 | | 0.58 | 1.00 | | | 0.91 | | | 0.85 | |
| Satd. Flow (perm) | 836 | 3038 | | 947 | 3017 | | | 3272 | | | 3104 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 48 | 269 | 19 | 23 | 279 | 53 | 23 | 127 | 45 | 65 | 151 | 64 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 24 | 0 | 0 | 26 | 0 | 0 | 37 | 0 |
| Lane Group Flow (vph) | 48 | 280 | 0 | 23 | 308 | 0 | 0 | 169 | 0 | 0 | 243 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 386 | 1402 | | 437 | 1392 | | | 1359 | | | 1289 | |
| v/s Ratio Prot | | 0.09 | | | c0.10 | | | | | | | |
| v/s Ratio Perm | 0.06 | | | 0.02 | | | | 0.05 | | | c0.08 | |
| v/c Ratio | 0.12 | 0.20 | | 0.05 | 0.22 | | | 0.12 | | | 0.19 | |
| Uniform Delay, d1 | 10.0 | 10.4 | | 9.7 | 10.5 | | | 11.7 | | | 12.0 | |
| Progression Factor | 0.72 | 0.73 | | 0.59 | 0.47 | | | 1.06 | | | 0.39 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.3 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.8 | 7.9 | | 5.9 | 5.2 | | | 12.6 | | | 5.0 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.9 | | | 5.3 | | | 12.6 | | | 5.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.2 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 43 | 434 | 18 | 71 | 410 | 182 | 17 | 96 | 89 | 262 | 201 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3288 | | | 3167 | | | 3087 | | | 3181 | |
| Flt Permitted | | 0.85 | | | 0.83 | | | 0.93 | | | 0.73 | |
| Satd. Flow (perm) | | 2798 | | | 2654 | | | 2888 | | | 2376 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 46 | 467 | 19 | 76 | 441 | 196 | 18 | 103 | 96 | 282 | 216 | 68 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 61 | 0 | 0 | 52 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 528 | 0 | 0 | 652 | 0 | 0 | 165 | 0 | 0 | 550 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 1076 | | | 1021 | | | 1364 | | | 621 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.19 | | | c0.25 | | | 0.04 | | | c0.23 | |
| v/c Ratio | | 0.49 | | | 0.64 | | | 0.12 | | | 0.95dl | |
| Uniform Delay, d1 | | 15.2 | | | 16.3 | | | 10.0 | | | 23.1 | |
| Progression Factor | | 1.49 | | | 1.00 | | | 1.00 | | | 0.80 | |
| Incremental Delay, d2 | | 1.6 | | | 3.1 | | | 0.2 | | | 16.5 | |
| Delay (s) | | 24.2 | | | 19.4 | | | 10.2 | | | 35.0 | |
| Level of Service | | C | | | B | | | B | | | D | |
| Approach Delay (s) | | 24.2 | | | 19.4 | | | 10.2 | | | 35.0 | |
| Approach LOS | | C | | | B | | | B | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 73.9% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 782 | 111 | 40 | 648 | 0 | 68 | 0 | 31 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1618 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2600 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 0 | 841 | 119 | 43 | 697 | 0 | 73 | 0 | 33 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 945 | 0 | 0 | 740 | 0 | 0 | 88 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 953 | | | 236 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.28 | | | c0.07 | | | | | |
| v/c Ratio | 0.48 | | | 0.78 | | | 0.37 | | | | | |
| Uniform Delay, d1 | 8.3 | | | 25.2 | | | 32.6 | | | | | |
| Progression Factor | 0.00 | | | 1.30 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.5 | | | 6.0 | | | 4.5 | | | | | |
| Delay (s) | 0.5 | | | 38.8 | | | 37.0 | | | | | |
| Level of Service | A | | | D | | | D | | | | | |
| Approach Delay (s) | 0.5 | | | 38.8 | | | 37.0 | | | 0.0 | | |
| Approach LOS | A | | | D | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 18.3 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.61 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 64.9% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 195 | 599 | 20 | 92 | 486 | 152 | 51 | 4 | 91 | 180 | 9 | 180 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.39 | 1.00 | | 0.39 | 1.00 | 1.00 | | 0.88 | | 0.46 | 1.00 | 1.00 |
| Satd. Flow (perm) | 636 | 3194 | | 681 | 3320 | 1485 | | 1596 | | 797 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 210 | 644 | 22 | 99 | 523 | 163 | 55 | 4 | 98 | 194 | 10 | 194 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 70 | 0 | 87 | 0 | 0 | 0 | 118 |
| Lane Group Flow (vph) | 210 | 664 | 0 | 99 | 523 | 93 | 0 | 70 | 0 | 194 | 10 | 76 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 56.7 | 46.4 | | 49.1 | 41.8 | 51.6 | | 10.5 | | 23.3 | 23.3 | 35.2 |
| Effective Green, g (s) | 56.7 | 46.4 | | 49.1 | 41.8 | 51.6 | | 10.5 | | 23.3 | 23.3 | 35.2 |
| Actuated g/C Ratio | 0.63 | 0.52 | | 0.55 | 0.46 | 0.57 | | 0.12 | | 0.26 | 0.26 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 522 | 1647 | | 451 | 1542 | 851 | | 186 | | 300 | 453 | 581 |
| v/s Ratio Prot | c0.05 | c0.21 | | 0.02 | 0.16 | 0.01 | | | | c0.07 | 0.01 | 0.02 |
| v/s Ratio Perm | 0.20 | | | 0.10 | | 0.05 | | 0.04 | | c0.10 | | 0.03 |
| v/c Ratio | 0.40 | 0.40 | | 0.22 | 0.34 | 0.11 | | 0.38 | | 0.65 | 0.02 | 0.13 |
| Uniform Delay, d1 | 7.5 | 13.3 | | 9.9 | 15.3 | 8.7 | | 36.7 | | 28.5 | 24.9 | 17.6 |
| Progression Factor | 2.52 | 1.99 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.3 | 0.6 | 0.1 | | 1.8 | | 4.7 | 0.0 | 0.1 |
| Delay (s) | 19.4 | 27.2 | | 10.2 | 15.9 | 8.8 | | 38.5 | | 33.3 | 24.9 | 17.7 |
| Level of Service | B | C | | B | B | A | | D | | C | C | B |
| Approach Delay (s) | | 25.4 | | | 13.7 | | | 38.5 | | | 25.5 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 54.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 483 | 387 | 2 | 286 | 0 | 0 | 0 | 0 | 16 | 0 | 444 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | | | | | | | |
| Hourly flow rate (vph) | 0 | 519 | 416 | 2 | 308 | 0 | 0 | 0 | 0 | 17 | 0 | 477 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 308 | | | 519 | | | 677 | 831 | 260 | 572 | 831 | 154 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 308 | | | 519 | | | 677 | 831 | 260 | 572 | 831 | 154 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 96 | 100 | 45 | | | | | | | |
| cM capacity (veh/h) | 1243 | | | 1036 | | | 150 | 301 | 736 | 401 | 301 | 862 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 260 | 260 | 416 | 105 | 205 | 17 | 477 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 17 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 416 | 0 | 0 | 0 | 477 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 1036 | 1700 | 401 | 862 | | | | | | | | | | | | |
| Volume to Capacity | 0.15 | 0.15 | 0.24 | 0.00 | 0.12 | 0.04 | 0.55 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 3 | 87 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 14.4 | 14.2 | | | | | | | | | | | | |
| Lane LOS | | | | A | | B | | B | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 14.2 | | | | | | | | | | | | |
| Approach LOS | | | | | | B | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 4.1 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 44.1% | | ICU Level of Service | | | | A | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013

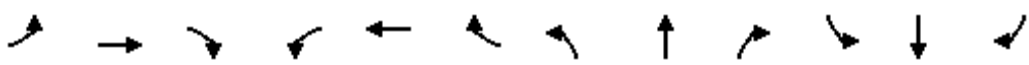


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 499 | 0 | 288 | 0 | 0 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 537 | 0 | 310 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 268 | 268 | 310 | | | |
| Volume Left (vph) | 268 | 268 | 310 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.0 | 6.0 | 5.4 | | | |
| Degree Utilization, x | 0.44 | 0.44 | 0.47 | | | |
| Capacity (veh/h) | 587 | 590 | 639 | | | |
| Control Delay (s) | 12.4 | 12.4 | 13.2 | | | |
| Approach Delay (s) | 12.4 | | 13.2 | | | |
| Approach LOS | B | | B | | | |
| Intersection Summary | | | | | | |
| Delay | | | 12.7 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 38.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 472 | 64 | 175 | 451 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3152 | | 1605 | 3210 | | | | | | 3075 | |
| Flt Permitted | | 1.00 | | 0.36 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3152 | | 604 | 3210 | | | | | | 3075 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 0 | 508 | 69 | 188 | 485 | 0 | 0 | 0 | 0 | 109 | 23 | 62 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 0 | 188 | 485 | 0 | 0 | 0 | 0 | 0 | 152 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 466 | 1850 | | | | | | 977 | |
| v/s Ratio Prot | | c0.18 | | c0.05 | 0.15 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | 0.19 | | | | | | | | |
| v/c Ratio | | 0.42 | | 0.40 | 0.26 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.2 | | 14.6 | 9.0 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.36 | 0.23 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 2.3 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.2 | | 7.6 | 2.4 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.2 | | | 3.8 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 42.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 557 | 106 | 69 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3133 | | | 4509 | | | | |
| Flt Permitted | 0.28 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 487 | 3320 | | | 3133 | | | 4509 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 102 | 514 | 0 | 0 | 599 | 114 | 74 | 97 | 62 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 42 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 102 | 514 | 0 | 0 | 695 | 0 | 0 | 191 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 413 | 1875 | | | 1290 | | | 1432 | | | | |
| v/s Ratio Prot | 0.03 | c0.15 | | | c0.22 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.11 | | | | | | | | | | | |
| v/c Ratio | 0.25 | 0.27 | | | 0.54 | | | 0.13 | | | | |
| Uniform Delay, d1 | 15.5 | 9.5 | | | 18.9 | | | 20.7 | | | | |
| Progression Factor | 0.35 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.3 | 0.3 | | | 1.6 | | | 0.2 | | | | |
| Delay (s) | 6.8 | 3.4 | | | 20.5 | | | 20.9 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 3.9 | | | 20.5 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.0 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 42.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 342 | 114 | 79 | 366 | 79 | 129 | 78 | 27 | 27 | 78 | 129 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2976 | | | 3006 | | | 1842 | | | 1769 | |
| Flt Permitted | | 0.68 | | | 0.74 | | | 0.73 | | | 0.95 | |
| Satd. Flow (perm) | | 2050 | | | 2242 | | | 1387 | | | 1691 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 123 | 368 | 123 | 85 | 394 | 85 | 139 | 84 | 29 | 29 | 84 | 139 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 22 | 0 | 0 | 7 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 580 | 0 | 0 | 542 | 0 | 0 | 245 | 0 | 0 | 184 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 725 | | | 793 | | | 683 | | | 832 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.28 | | | 0.24 | | | c0.18 | | | 0.11 | |
| v/c Ratio | | 0.80 | | | 0.68 | | | 0.36 | | | 0.22 | |
| Uniform Delay, d1 | | 18.9 | | | 17.9 | | | 10.2 | | | 9.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 9.0 | | | 4.7 | | | 1.5 | | | 0.6 | |
| Delay (s) | | 27.9 | | | 22.6 | | | 11.6 | | | 10.0 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 27.9 | | | 22.6 | | | 11.6 | | | 10.0 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 21.0 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.54 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 77.6% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 201 | 88 | 159 | 311 | 65 | 96 | 415 | 52 | 76 | 752 | 117 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1518 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.21 | 1.00 | 1.00 | 0.43 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 330 | 3069 | 1333 | 692 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 93 | 167 | 327 | 68 | 101 | 437 | 55 | 80 | 792 | 123 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 35 | 0 | 0 | 78 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 167 | 374 | 0 | 101 | 437 | 20 | 80 | 792 | 45 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 223 | 1119 | 486 | 351 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.03 | 0.14 | | 0.02 | c0.26 | |
| v/s Ratio Perm | 0.11 | | | c0.15 | | | 0.16 | | 0.02 | 0.08 | | 0.03 |
| v/c Ratio | 0.37 | 0.25 | | 0.49 | 0.31 | | 0.45 | 0.39 | 0.04 | 0.23 | 0.70 | 0.09 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 20.7 | 21.3 | | 16.2 | 20.0 | 17.4 | 15.0 | 23.0 | 17.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.47 | 1.07 | 2.37 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 4.9 | 0.7 | | 6.5 | 1.0 | 0.2 | 1.1 | 2.7 | 0.3 |
| Delay (s) | 23.0 | 21.5 | | 25.5 | 21.9 | | 22.7 | 21.0 | 17.6 | 23.1 | 27.4 | 42.3 |
| Level of Service | C | C | | C | C | | C | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 23.0 | | | 21.0 | | | 28.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 63.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 48 | 295 | 30 | 32 | 375 | 23 | 26 | 77 | 32 | 34 | 117 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2001 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.92 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1787 | 1466 | | 1912 | 1480 | | 1882 | 1506 | | 1884 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 311 | 32 | 34 | 395 | 24 | 27 | 81 | 34 | 36 | 123 | 64 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 20 | 0 | 0 | 37 |
| Lane Group Flow (vph) | 0 | 362 | 15 | 0 | 429 | 11 | 0 | 108 | 14 | 0 | 159 | 27 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 825 | 677 | | 882 | 683 | | 782 | 626 | | 783 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.22 | 0.01 | | 0.06 | 0.01 | | 0.08 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.49 | 0.02 | | 0.14 | 0.02 | | 0.20 | 0.04 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.2 | 9.5 | | 11.8 | 11.2 | | 12.1 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.62 | 0.51 | | 1.26 | 1.61 | | 0.97 | 0.84 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 1.9 | 0.0 | | 0.4 | 0.1 | | 0.6 | 0.1 |
| Delay (s) | | 13.5 | 9.6 | | 9.4 | 4.9 | | 15.2 | 18.1 | | 12.3 | 9.6 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 13.2 | | | 9.2 | | | 15.9 | | | 11.6 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.35 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 67.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 305 | 20 | 40 | 240 | 30 | 10 | 100 | 20 | 85 | 165 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3070 | | 1550 | 3048 | | 1550 | 3020 | | 1550 | 2990 | |
| Flt Permitted | 0.95 | 1.00 | | 0.54 | 1.00 | | 0.61 | 1.00 | | 0.67 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3070 | | 884 | 3048 | | 991 | 3020 | | 1092 | 2990 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 81 | 328 | 22 | 43 | 258 | 32 | 11 | 108 | 22 | 91 | 177 | 54 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 15 | 0 | 0 | 13 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 81 | 342 | 0 | 43 | 275 | 0 | 11 | 117 | 0 | 91 | 199 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1511 | | 299 | 1032 | | 412 | 1254 | | 454 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.09 | | | 0.04 | | | 0.07 | |
| v/s Ratio Perm | | | | 0.05 | | | 0.01 | | | c0.08 | | |
| v/c Ratio | 0.49 | 0.23 | | 0.14 | 0.27 | | 0.03 | 0.09 | | 0.20 | 0.16 | |
| Uniform Delay, d1 | 27.3 | 9.4 | | 15.0 | 15.6 | | 11.2 | 11.6 | | 12.1 | 11.9 | |
| Progression Factor | 0.92 | 0.50 | | 0.81 | 0.77 | | 0.98 | 1.04 | | 1.17 | 1.18 | |
| Incremental Delay, d2 | 9.3 | 0.3 | | 1.0 | 0.6 | | 0.1 | 0.1 | | 1.0 | 0.3 | |
| Delay (s) | 34.5 | 5.0 | | 13.0 | 12.7 | | 11.1 | 12.2 | | 15.1 | 14.3 | |
| Level of Service | C | A | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 10.6 | | | 12.7 | | | 12.1 | | | 14.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 34.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 60 | 250 | 65 | 175 | 285 | 55 | 25 | 245 | 20 | 55 | 270 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3003 | | 1550 | 3024 | | | 3271 | | | 3230 | |
| Flt Permitted | 0.53 | 1.00 | | 0.95 | 1.00 | | | 0.91 | | | 0.87 | |
| Satd. Flow (perm) | 871 | 3003 | | 1550 | 3024 | | | 2974 | | | 2815 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 65 | 269 | 70 | 188 | 306 | 59 | 27 | 263 | 22 | 59 | 290 | 54 |
| RTOR Reduction (vph) | 0 | 36 | 0 | 0 | 24 | 0 | 0 | 9 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 65 | 303 | 0 | 188 | 341 | 0 | 0 | 303 | 0 | 0 | 384 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 268 | 924 | | 143 | 1349 | | | 1144 | | | 1083 | |
| v/s Ratio Prot | c0.10 | | | c0.12 | | | | | | | | |
| v/s Ratio Perm | 0.07 | | | | | | 0.10 | | | c0.14 | | |
| v/c Ratio | 0.24 | 0.33 | | 1.31 | 0.25 | | | 0.27 | | | 0.35 | |
| Uniform Delay, d1 | 16.8 | 17.3 | | 29.5 | 11.2 | | | 13.7 | | | 14.3 | |
| Progression Factor | 0.64 | 0.59 | | 1.31 | 1.08 | | | 0.79 | | | 0.75 | |
| Incremental Delay, d2 | 2.1 | 0.9 | | 172.6 | 0.3 | | | 0.6 | | | 0.9 | |
| Delay (s) | 12.9 | 11.1 | | 211.2 | 12.4 | | | 11.4 | | | 11.6 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 11.4 | | | 80.0 | | | 11.4 | | | 11.6 | | |
| Approach LOS | B | | | E | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.1 | HCM Level of Service | | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | 11.0 | | | | |
| Intersection Capacity Utilization | | | 52.9% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

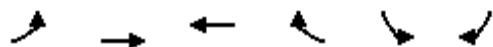
1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 293 | 16 | 65 | 522 | 65 | 49 | 101 | 152 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1616 | | | 1601 | | | 3249 | | | | |
| Flt Permitted | | 0.97 | | | 0.94 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1564 | | | 1505 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 17 | 315 | 17 | 70 | 561 | 70 | 53 | 109 | 163 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 125 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 346 | 0 | 0 | 696 | 0 | 0 | 200 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.7 | | | 41.7 | | | 15.3 | | | | |
| Effective Green, g (s) | | 41.7 | | | 41.7 | | | 15.3 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 1003 | | | 966 | | | 765 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.46 | | | 0.06 | | | | |
| v/c Ratio | | 0.35 | | | 0.72 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.8 | | | 20.2 | | | | |
| Progression Factor | | 1.64 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 4.6 | | | 0.8 | | | | |
| Delay (s) | | 9.7 | | | 12.4 | | | 21.0 | | | | |
| Level of Service | | A | | | B | | | C | | | | |
| Approach Delay (s) | | 9.7 | | | 12.4 | | | 21.0 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 74.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

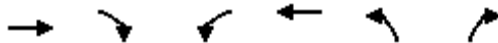


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 73 | 372 | 503 | 34 | 112 | 149 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 83 | 423 | 572 | 39 | 127 | 169 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.85 | | | | 0.85 | 0.85 |
| vC, conflicting volume | 627 | | | | 1203 | 613 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 473 | | | | 1150 | 456 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 91 | | | | 24 | 67 |
| cM capacity (veh/h) | 901 | | | | 168 | 508 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 506 | 610 | 127 | 169 | | |
| Volume Left | 83 | 0 | 127 | 0 | | |
| Volume Right | 0 | 39 | 0 | 169 | | |
| cSH | 901 | 1700 | 168 | 508 | | |
| Volume to Capacity | 0.09 | 0.36 | 0.76 | 0.33 | | |
| Queue Length 95th (ft) | 8 | 0 | 121 | 36 | | |
| Control Delay (s) | 2.5 | 0.0 | 73.7 | 15.6 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 2.5 | 0.0 | 40.5 | | | |
| Approach LOS | | | E | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 9.4 | | | |
| Intersection Capacity Utilization | | | 72.7% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 645 | 0 | 1 | 530 | 3 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1527 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1746 | 1527 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 694 | 0 | 1 | 570 | 3 | 29 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 694 | 0 | 0 | 571 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 252 | |
| v/s Ratio Prot | c0.40 | | | | c0.01 | |
| v/s Ratio Perm | | | | c0.33 | | |
| v/c Ratio | 0.57 | | | 0.90 | 0.03 | |
| Uniform Delay, d1 | 6.6 | | | 25.5 | 29.8 | |
| Progression Factor | 0.08 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.3 | | | 17.7 | 0.2 | |
| Delay (s) | 1.8 | | | 43.2 | 30.0 | |
| Level of Service | A | | | D | C | |
| Approach Delay (s) | 1.8 | | | 43.2 | 30.0 | |
| Approach LOS | A | | | D | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 20.7 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.60 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 45.8% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 203 | 542 | 25 | 311 | 0 | 0 | 0 | 0 | 15 | 6 | 220 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 216 | 577 | 27 | 331 | 0 | 0 | 0 | 0 | 16 | 6 | 234 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 331 | | | 216 | | | 891 | 888 | 396 | 492 | 600 | 331 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 331 | | | 216 | | | 891 | 888 | 396 | 492 | 600 | 331 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 98 | | | 100 | 100 | 100 | 97 | 98 | 65 |
| cM capacity (veh/h) | 1240 | | | 1337 | | | 151 | 279 | 609 | 457 | 409 | 665 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 144 | 649 | 357 | 22 | 234 | | | | | | | |
| Volume Left | 0 | 0 | 27 | 16 | 0 | | | | | | | |
| Volume Right | 0 | 577 | 0 | 0 | 234 | | | | | | | |
| cSH | 1700 | 1700 | 1337 | 442 | 665 | | | | | | | |
| Volume to Capacity | 0.08 | 0.38 | 0.02 | 0.05 | 0.35 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 4 | 40 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 13.6 | 13.3 | | | | | | | |
| Lane LOS | | | A | B | B | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 13.3 | | | | | | | | |
| Approach LOS | | | | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 49.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 218 | 0 | 336 | 0 | 0 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 234 | 0 | 361 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 117 | 117 | 361 | | | |
| Volume Left (vph) | 117 | 117 | 361 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.0 | 6.0 | 4.8 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.48 | | | |
| Capacity (veh/h) | 570 | 572 | 729 | | | |
| Control Delay (s) | 9.2 | 9.2 | 12.2 | | | |
| Approach Delay (s) | 9.2 | | 12.2 | | | |
| Approach LOS | A | | B | | | |
| Intersection Summary | | | | | | |
| Delay | | | 11.1 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 32.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 456 | 311 | 217 | 512 | 0 | 0 | 0 | 0 | 286 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1215 | | 3424 | | | | | 1359 | 3807 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1215 | | 3424 | | | | | 1359 | 3807 | 1133 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 0 | 485 | 331 | 231 | 545 | 0 | 0 | 0 | 0 | 304 | 286 | 396 |
| RTOR Reduction (vph) | 0 | 0 | 228 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 114 |
| Lane Group Flow (vph) | 0 | 485 | 103 | 0 | 776 | 0 | 0 | 0 | 0 | 167 | 568 | 84 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 38.9 | 38.9 | | 68.3 | | | | | 23.0 | 23.0 | 67.9 |
| Effective Green, g (s) | | 38.9 | 38.9 | | 68.3 | | | | | 23.0 | 23.0 | 67.9 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 773 | 295 | | 1462 | | | | | 195 | 547 | 481 |
| v/s Ratio Prot | | c0.15 | | | c0.23 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.08 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.63 | 0.35 | | 0.53 | | | | | 0.86 | 1.04 | 0.17 |
| Uniform Delay, d1 | | 54.1 | 50.1 | | 34.0 | | | | | 66.9 | 68.5 | 28.6 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 3.8 | 3.2 | | 0.1 | | | | | 28.9 | 48.7 | 0.2 |
| Delay (s) | | 57.9 | 53.3 | | 0.7 | | | | | 95.8 | 117.2 | 28.8 |
| Level of Service | | E | D | | A | | | | | F | F | C |
| Approach Delay (s) | | 56.1 | | | 0.7 | | | 0.0 | | | 95.9 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 54.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.8 | | |
| Intersection Capacity Utilization | | | 68.5% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 282 | 460 | 0 | 0 | 484 | 127 | 245 | 170 | 154 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3063 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3063 | | | | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 303 | 495 | 0 | 0 | 520 | 137 | 263 | 183 | 166 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 66 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 303 | 495 | 0 | 0 | 520 | 45 | 208 | 338 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 83.7 | 83.7 | | | 35.2 | 35.2 | 14.1 | 14.1 | | | | |
| Effective Green, g (s) | 83.7 | 83.7 | | | 35.2 | 35.2 | 14.1 | 14.1 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.22 | 0.22 | 0.09 | 0.09 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 840 | 1795 | | | 706 | 327 | 138 | 270 | | | | |
| v/s Ratio Prot | c0.19 | 0.14 | | | c0.16 | | c0.13 | 0.11 | | | | |
| v/s Ratio Perm | | | | | 0.03 | | | | | | | |
| v/c Ratio | 0.36 | 0.28 | | | 0.74 | 0.14 | 1.51 | 1.25 | | | | |
| Uniform Delay, d1 | 22.4 | 21.3 | | | 58.1 | 50.2 | 73.0 | 73.0 | | | | |
| Progression Factor | 0.02 | 0.03 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 4.0 | 0.2 | 262.0 | 140.6 | | | | |
| Delay (s) | 0.7 | 0.6 | | | 62.1 | 50.4 | 335.0 | 213.6 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 0.6 | | | 59.7 | | 254.8 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 94.7 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.59 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 57.4% | | | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 130 | 239 | 126 | 81 | 190 | 61 | 92 | 443 | 60 | 96 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1571 | 1600 | 1373 | 1592 | 1778 | | 1578 | 3015 | | 1536 | 3001 | |
| Flt Permitted | 0.46 | 1.00 | 1.00 | 0.52 | 1.00 | | 0.15 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | 758 | 1600 | 1373 | 875 | 1778 | | 246 | 3015 | | 618 | 3001 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 133 | 244 | 129 | 83 | 194 | 62 | 94 | 452 | 61 | 98 | 819 | 122 |
| RTOR Reduction (vph) | 0 | 0 | 87 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 133 | 244 | 42 | 83 | 244 | 0 | 94 | 501 | 0 | 98 | 928 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 345 | 542 | 450 | 342 | 553 | | 171 | 1150 | | 306 | 1145 | |
| v/s Ratio Prot | c0.03 | c0.15 | | 0.01 | 0.14 | | c0.03 | 0.17 | | 0.02 | c0.31 | |
| v/s Ratio Perm | 0.12 | | 0.03 | 0.07 | | | 0.20 | | | 0.12 | | |
| v/c Ratio | 0.39 | 0.45 | 0.09 | 0.24 | 0.44 | | 0.55 | 0.44 | | 0.32 | 0.81 | |
| Uniform Delay, d1 | 18.8 | 23.1 | 20.8 | 20.0 | 24.6 | | 17.9 | 20.5 | | 16.2 | 24.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.7 | 2.7 | 0.4 | 0.4 | 2.5 | | 3.6 | 1.2 | | 0.6 | 6.3 | |
| Delay (s) | 19.6 | 25.7 | 21.3 | 20.4 | 27.1 | | 21.5 | 21.7 | | 16.9 | 31.0 | |
| Level of Service | B | C | C | C | C | | C | C | | B | C | |
| Approach Delay (s) | | 23.0 | | | 25.5 | | | 21.7 | | | 29.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 70.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | ↔ | | ↔ | | | ↔ | |
| Volume (vph) | 35 | 275 | 54 | 11 | 251 | 19 | 32 | 51 | 17 | 18 | 76 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1968 | 1467 | | 1629 | 1381 | | 1892 | | | 1871 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.90 | | | 0.97 | |
| Satd. Flow (perm) | | 1877 | 1467 | | 1609 | 1381 | | 1730 | | | 1827 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 38 | 302 | 59 | 12 | 276 | 21 | 35 | 56 | 19 | 20 | 84 | 64 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 0 | 340 | 29 | 0 | 288 | 10 | 0 | 99 | 0 | 0 | 134 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 924 | 722 | | 792 | 680 | | 719 | | | 759 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | 0.02 | | 0.18 | 0.01 | | 0.06 | | | c0.07 | |
| v/c Ratio | | 0.37 | 0.04 | | 0.36 | 0.02 | | 0.14 | | | 0.18 | |
| Uniform Delay, d1 | | 10.2 | 8.5 | | 10.2 | 8.4 | | 11.8 | | | 12.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.98 | 2.85 | | 1.00 | | | 1.96 | |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 1.3 | 0.0 | | 0.4 | | | 0.5 | |
| Delay (s) | | 11.4 | 8.7 | | 21.4 | 24.1 | | 12.2 | | | 23.9 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 11.0 | | | 21.6 | | | 12.2 | | | 23.9 | |
| Approach LOS | | B | | | C | | | B | | | C | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 16.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.28 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 55.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 53 | 172 | 37 | 10 | 180 | 9 | 28 | 88 | 15 | 12 | 142 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1747 | 1443 | | 1728 | 1487 | | 1713 | 1489 | | 1712 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.98 | 1.00 | | 0.91 | 1.00 | | 0.99 | |
| Satd. Flow (perm) | | 1571 | 1443 | | 1702 | 1487 | | 1581 | 1489 | | 1694 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 55 | 179 | 39 | 10 | 188 | 9 | 29 | 92 | 16 | 12 | 148 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 25 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 234 | 14 | 0 | 198 | 3 | 0 | 121 | 8 | 0 | 197 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 556 | 511 | | 602 | 526 | | 778 | 733 | | 834 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | 0.01 | | 0.12 | 0.00 | | 0.08 | 0.01 | | c0.12 | |
| v/c Ratio | | 0.42 | 0.03 | | 0.33 | 0.01 | | 0.16 | 0.01 | | 0.24 | |
| Uniform Delay, d1 | | 15.9 | 13.7 | | 15.4 | 13.6 | | 9.1 | 8.4 | | 9.5 | |
| Progression Factor | | 1.95 | 3.44 | | 0.97 | 0.99 | | 0.21 | 0.26 | | 1.08 | |
| Incremental Delay, d2 | | 2.2 | 0.1 | | 1.4 | 0.0 | | 0.3 | 0.0 | | 0.7 | |
| Delay (s) | | 33.3 | 47.3 | | 16.3 | 13.5 | | 2.3 | 2.2 | | 10.9 | |
| Level of Service | | C | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 35.3 | | | 16.2 | | | 2.3 | | | 10.9 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 58.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 147 | 35 | 76 | 8 | 14 | 9 | 37 | 219 | 8 | 17 | 379 | 161 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1871 | 1440 | | 1776 | | | 1992 | | | 1976 | 1382 |
| Flt Permitted | | 0.78 | 1.00 | | 0.94 | | | 0.92 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1509 | 1440 | | 1693 | | | 1845 | | | 1950 | 1382 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 155 | 37 | 80 | 8 | 15 | 9 | 39 | 231 | 8 | 18 | 399 | 169 |
| RTOR Reduction (vph) | 0 | 0 | 47 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 86 |
| Lane Group Flow (vph) | 0 | 192 | 33 | 0 | 25 | 0 | 0 | 276 | 0 | 0 | 417 | 83 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 671 | 598 | | 443 | | | 908 | | | 960 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | 0.02 | | 0.01 | | | 0.15 | | | c0.21 | 0.06 |
| v/c Ratio | | 0.29 | 0.06 | | 0.06 | | | 0.30 | | | 0.43 | 0.12 |
| Uniform Delay, d1 | | 12.6 | 11.4 | | 18.0 | | | 9.9 | | | 10.7 | 8.9 |
| Progression Factor | | 0.57 | 0.58 | | 1.00 | | | 0.62 | | | 0.53 | 0.27 |
| Incremental Delay, d2 | | 1.0 | 0.2 | | 0.2 | | | 0.8 | | | 1.1 | 0.3 |
| Delay (s) | | 8.2 | 6.8 | | 18.2 | | | 6.9 | | | 6.7 | 2.7 |
| Level of Service | | A | A | | B | | | A | | | A | A |
| Approach Delay (s) | | 7.8 | | | 18.2 | | | 6.9 | | | 5.6 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 6.8 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 64.2% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |













Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 866 | 289 | 292 | 842 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4570 | | 1620 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4570 | | 255 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 884 | 295 | 298 | 859 | 0 | 0 | 0 | 0 | 523 | 290 | 341 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 135 |
| Lane Group Flow (vph) | 0 | 1137 | 0 | 298 | 859 | 0 | 0 | 0 | 0 | 298 | 584 | 128 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 50.4 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Effective Green, g (s) | | 50.4 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Actuated g/C Ratio | | 0.44 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2003 | | 408 | 2171 | | | | | 360 | 704 | 349 |
| v/s Ratio Prot | | 0.25 | | 0.13 | 0.26 | | | | | | | |
| v/s Ratio Perm | | | | 0.35 | | | | | | 0.20 | 0.20 | 0.09 |
| v/c Ratio | | 0.57 | | 0.73 | 0.40 | | | | | 0.83 | 0.83 | 0.37 |
| Uniform Delay, d1 | | 24.2 | | 17.7 | 9.3 | | | | | 41.3 | 41.4 | 36.3 |
| Progression Factor | | 1.00 | | 1.32 | 1.20 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.2 | | 5.6 | 0.4 | | | | | 14.8 | 8.2 | 0.8 |
| Delay (s) | | 25.3 | | 28.9 | 11.6 | | | | | 56.1 | 49.6 | 37.1 |
| Level of Service | | C | | C | B | | | | | E | D | D |
| Approach Delay (s) | | 25.3 | | | 16.1 | | | 0.0 | | | 48.4 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 92.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |  | |    | | | | |
| Volume (vph) | 341 | 1038 | 0 | 0 | 811 | 261 | 323 | 270 | 237 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3143 | 3353 | | | 3241 | 1490 | | 4525 | | | | |
| Flt Permitted | 0.23 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 755 | 3353 | | | 3241 | 1490 | | 4525 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1093 | 0 | 0 | 854 | 275 | 340 | 284 | 249 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 112 | 0 | 63 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1093 | 0 | 0 | 854 | 163 | 0 | 810 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 73.9 | 73.9 | | | 56.5 | 56.5 | | 29.1 | | | | |
| Effective Green, g (s) | 73.9 | 73.9 | | | 56.5 | 56.5 | | 29.1 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.49 | 0.49 | | 0.25 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 722 | 2155 | | | 1592 | 732 | | 1145 | | | | |
| v/s Ratio Prot | 0.05 | c0.33 | | | c0.26 | | | | | | | |
| v/s Ratio Perm | 0.27 | | | | | 0.11 | | 0.18 | | | | |
| v/c Ratio | 0.50 | 0.51 | | | 0.54 | 0.22 | | 0.71 | | | | |
| Uniform Delay, d1 | 10.7 | 10.9 | | | 20.2 | 16.7 | | 39.1 | | | | |
| Progression Factor | 0.30 | 0.32 | | | 1.02 | 1.21 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.5 | 0.7 | | | 1.1 | 0.6 | | 2.5 | | | | |
| Delay (s) | 3.7 | 4.1 | | | 21.8 | 20.8 | | 41.6 | | | | |
| Level of Service | A | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 4.0 | | | 21.5 | | | 41.6 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.3 | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 92.8% | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 122 | 571 | 368 | 94 | 564 | 48 | 227 | 179 | 66 | 74 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1564 | 3273 | 1313 | 1600 | 3279 | | 1578 | 3002 | | 1540 | 2940 | |
| Flt Permitted | 0.21 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 344 | 3273 | 1313 | 711 | 3279 | | 648 | 3002 | | 958 | 2940 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 130 | 607 | 391 | 100 | 600 | 51 | 241 | 190 | 70 | 79 | 172 | 129 |
| RTOR Reduction (vph) | 0 | 0 | 157 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 108 | 0 |
| Lane Group Flow (vph) | 130 | 607 | 234 | 100 | 645 | 0 | 241 | 222 | 0 | 79 | 193 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.7 | 52.4 | 68.9 | 40.6 | 31.8 | | 38.3 | 26.8 | | 26.3 | 18.3 | |
| Effective Green, g (s) | 64.7 | 52.4 | 68.9 | 40.6 | 31.8 | | 38.3 | 26.8 | | 26.3 | 18.3 | |
| Actuated g/C Ratio | 0.56 | 0.46 | 0.60 | 0.35 | 0.28 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 505 | 1491 | 787 | 319 | 907 | | 349 | 700 | | 260 | 468 | |
| v/s Ratio Prot | 0.07 | c0.19 | 0.04 | c0.02 | c0.20 | | c0.10 | 0.07 | | 0.02 | 0.07 | |
| v/s Ratio Perm | 0.08 | | 0.14 | 0.09 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.26 | 0.41 | 0.30 | 0.31 | 0.71 | | 0.69 | 0.32 | | 0.30 | 0.41 | |
| Uniform Delay, d1 | 13.6 | 20.9 | 11.2 | 25.7 | 37.5 | | 30.5 | 36.5 | | 36.1 | 43.5 | |
| Progression Factor | 0.68 | 0.86 | 4.05 | 1.00 | 1.00 | | 0.81 | 0.88 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.1 | 0.7 | 0.2 | 0.6 | 4.7 | | 5.6 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 10.3 | 18.7 | 45.8 | 26.2 | 42.2 | | 30.4 | 33.0 | | 36.7 | 45.6 | |
| Level of Service | B | B | D | C | D | | C | C | | D | D | |
| Approach Delay (s) | | 27.1 | | | 40.1 | | | 31.8 | | | 43.7 | |
| Approach LOS | | C | | | D | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.8 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | Sum of lost time (s) | | | 19.0 | | | | | |
| Intersection Capacity Utilization | | | 67.9% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |





















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1067: Vermont Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 193 | 367 | 56 | 164 | 87 | 362 | 340 | 78 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1704 | 2894 | | 1653 | 3183 | | 1620 | 3407 | | 1580 | 3183 | |
| Flt Permitted | 0.58 | 1.00 | | 0.28 | 1.00 | | 0.30 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 1034 | 2894 | | 485 | 3183 | | 512 | 3407 | | 810 | 3183 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 51 | 212 | 403 | 62 | 180 | 96 | 398 | 374 | 86 | 226 | 448 | 62 |
| RTOR Reduction (vph) | 0 | 269 | 0 | 0 | 58 | 0 | 0 | 17 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 51 | 346 | 0 | 62 | 218 | 0 | 398 | 443 | 0 | 226 | 501 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 42.2 | 35.4 | | 43.4 | 36.0 | | 56.2 | 44.2 | | 39.7 | 31.7 | |
| Effective Green, g (s) | 42.2 | 35.4 | | 43.4 | 36.0 | | 56.2 | 44.2 | | 39.7 | 31.7 | |
| Actuated g/C Ratio | 0.37 | 0.31 | | 0.38 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 419 | 891 | | 258 | 996 | | 448 | 1309 | | 333 | 877 | |
| v/s Ratio Prot | 0.01 | c0.12 | | c0.02 | 0.07 | | c0.16 | 0.13 | | 0.05 | 0.16 | |
| v/s Ratio Perm | 0.04 | | | 0.08 | | | c0.28 | | | 0.19 | | |
| v/c Ratio | 0.12 | 0.39 | | 0.24 | 0.22 | | 0.89 | 0.34 | | 0.68 | 0.57 | |
| Uniform Delay, d1 | 23.8 | 31.3 | | 23.8 | 29.1 | | 21.3 | 25.1 | | 29.5 | 35.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Incremental Delay, d2 | 0.2 | 1.3 | | 0.6 | 0.5 | | 19.2 | 0.7 | | 5.4 | 2.6 | |
| Delay (s) | 23.9 | 32.6 | | 24.4 | 29.6 | | 40.5 | 25.8 | | 34.9 | 37.8 | |
| Level of Service | C | C | | C | C | | D | C | | C | D | |
| Approach Delay (s) | | 31.9 | | | 28.7 | | | 32.6 | | | 36.9 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 73.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 86 | 491 | 115 | 10 | 376 | 66 | 94 | 259 | 9 | 153 | 469 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3029 | | | 3034 | | 1451 | 3225 | | 1522 | 2871 | |
| Flt Permitted | | 0.74 | | | 0.93 | | 0.31 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | | 2268 | | | 2838 | | 468 | 3225 | | 922 | 2871 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 92 | 528 | 124 | 11 | 404 | 71 | 101 | 278 | 10 | 165 | 504 | 152 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 21 | 0 | 0 | 4 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 718 | 0 | 0 | 465 | 0 | 101 | 284 | 0 | 165 | 612 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 919 | | | 742 | | 262 | 1191 | | 434 | 1060 | |
| v/s Ratio Prot | | c0.05 | | | | | c0.02 | 0.09 | | 0.02 | c0.21 | |
| v/s Ratio Perm | | c0.25 | | | 0.16 | | 0.14 | | | 0.14 | | |
| v/c Ratio | | 0.78 | | | 0.63 | | 0.39 | 0.24 | | 0.38 | 0.58 | |
| Uniform Delay, d1 | | 17.6 | | | 21.2 | | 11.6 | 14.2 | | 11.8 | 16.4 | |
| Progression Factor | | 1.00 | | | 1.52 | | 0.71 | 0.61 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 6.6 | | | 1.4 | | 4.1 | 0.5 | | 2.5 | 2.3 | |
| Delay (s) | | 24.2 | | | 33.7 | | 12.4 | 9.1 | | 14.3 | 18.7 | |
| Level of Service | | C | | | C | | B | A | | B | B | |
| Approach Delay (s) | | 24.2 | | | 33.7 | | | 9.9 | | | 17.9 | |
| Approach LOS | | C | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 21.7 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | | |
| Intersection Capacity Utilization | | 71.9% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |





















Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1069: Vermont Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 67 | 198 | 136 | 84 | 129 | 22 | 64 | 409 | 71 | 27 | 537 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 1885 | | 1599 | 1991 | | 1676 | 3221 | | 1435 | 3273 | |
| Flt Permitted | 0.65 | 1.00 | | 0.42 | 1.00 | | 0.37 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 1174 | 1885 | | 712 | 1991 | | 652 | 3221 | | 668 | 3273 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 73 | 215 | 148 | 91 | 140 | 24 | 70 | 445 | 77 | 29 | 584 | 59 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 9 | 0 | 0 | 21 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 73 | 325 | 0 | 91 | 155 | 0 | 70 | 501 | 0 | 29 | 631 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 433 | 696 | | 263 | 735 | | 311 | 1536 | | 319 | 1561 | |
| v/s Ratio Prot | | c0.17 | | | 0.08 | | | 0.16 | | | c0.19 | |
| v/s Ratio Perm | 0.06 | | | 0.13 | | | 0.11 | | | 0.04 | | |
| v/c Ratio | 0.17 | 0.47 | | 0.35 | 0.21 | | 0.23 | 0.33 | | 0.09 | 0.40 | |
| Uniform Delay, d1 | 13.8 | 15.6 | | 14.8 | 14.0 | | 10.0 | 10.5 | | 9.3 | 11.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.35 | 1.37 | | 1.00 | 1.00 | | 0.86 | 0.75 | |
| Incremental Delay, d2 | 0.8 | 2.2 | | 1.9 | 0.3 | | 1.7 | 0.6 | | 0.5 | 0.6 | |
| Delay (s) | 14.6 | 17.9 | | 21.9 | 19.5 | | 11.6 | 11.1 | | 8.4 | 8.9 | |
| Level of Service | B | B | | C | B | | B | B | | A | A | |
| Approach Delay (s) | | 17.3 | | | 20.4 | | | 11.2 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 63.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Existing (2012) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|--------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔↔ | | ↔↔ | | | | ↔ | | | ↔ | |
| Volume (vph) | 2 | 628 | 198 | 479 | 16 | 3 | 9 | 8 | 41 | 8 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.93 | |
| Flt Protected | | 1.00 | | 0.99 | | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3160 | | 3090 | | | | 1812 | | | 1817 | |
| Flt Permitted | | 0.95 | | 0.55 | | | | 0.96 | | | 0.90 | |
| Satd. Flow (perm) | | 3011 | | 1730 | | | | 1754 | | | 1673 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 2 | 698 | 220 | 532 | 18 | 3 | 10 | 9 | 46 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 36 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 700 | 0 | 768 | 0 | 0 | 0 | 32 | 0 | 0 | 13 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 834 | | 844 | | | | 378 | | | 360 | |
| v/s Ratio Prot | | | | c0.08 | | | | | | | | |
| v/s Ratio Perm | | 0.23 | | c0.29 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 0.84 | | 1.02dl | | | | 0.08 | | | 0.04 | |
| Uniform Delay, d1 | | 22.1 | | 17.9 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.47 | | 0.92 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 7.4 | | 15.1 | | | | 0.4 | | | 0.2 | |
| Delay (s) | | 40.0 | | 31.6 | | | | 20.8 | | | 20.4 | |
| Level of Service | | D | | C | | | | C | | | C | |
| Approach Delay (s) | | 40.0 | | 31.6 | | | | 20.8 | | | 20.4 | |
| Approach LOS | | D | | C | | | | C | | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 47.5 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 84.1% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

Existing (2012) PM Peak
WRH


Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013

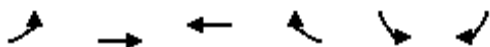


| Movement | SBR2 | NEL | NER |
|------------------------|------|---|------|
| Lane Configurations | |  | |
| Volume (vph) | 5 | 3 | 242 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 6 | 3 | 269 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 272 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.17 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.13 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.85 | |
| Incremental Delay, d2 | | 96.6 | |
| Delay (s) | | 120.1 | |
| Level of Service | | F | |
| Approach Delay (s) | | 120.1 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 230 | 689 | 513 | 57 | 74 | 180 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3279 | 3271 | | 1660 | 1485 |
| Flt Permitted | | 0.67 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2208 | 3271 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 247 | 741 | 552 | 61 | 80 | 194 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 143 |
| Lane Group Flow (vph) | 0 | 988 | 600 | 0 | 80 | 51 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1359 | 2013 | | 434 | 388 |
| v/s Ratio Prot | | | 0.18 | | c0.05 | |
| v/s Ratio Perm | | c0.45 | | | | 0.03 |
| v/c Ratio | | 0.73 | 0.30 | | 0.18 | 0.13 |
| Uniform Delay, d1 | | 8.7 | 5.9 | | 18.6 | 18.4 |
| Progression Factor | | 1.30 | 1.33 | | 1.19 | 1.93 |
| Incremental Delay, d2 | | 1.6 | 0.4 | | 0.9 | 0.7 |
| Delay (s) | | 12.8 | 8.2 | | 23.0 | 36.1 |
| Level of Service | | B | A | | C | D |
| Approach Delay (s) | | 12.8 | 8.2 | | 32.3 | |
| Approach LOS | | B | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 14.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.57 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 58.4% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 70 | 693 | 490 | 136 | 239 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3118 | 3068 | | 1506 | 1343 |
| Flt Permitted | | 0.83 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2612 | 3068 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 76 | 753 | 533 | 148 | 260 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 39 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 0 | 829 | 642 | 0 | 260 | 31 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1366 | 1605 | | 533 | 475 |
| v/s Ratio Prot | | | 0.21 | | c0.17 | |
| v/s Ratio Perm | | c0.32 | | | | 0.02 |
| v/c Ratio | | 0.61 | 0.40 | | 0.49 | 0.06 |
| Uniform Delay, d1 | | 10.8 | 9.3 | | 16.4 | 13.9 |
| Progression Factor | | 1.00 | 1.04 | | 1.60 | 3.14 |
| Incremental Delay, d2 | | 1.5 | 0.7 | | 3.0 | 0.2 |
| Delay (s) | | 12.3 | 10.5 | | 29.2 | 43.9 |
| Level of Service | | B | B | | C | D |
| Approach Delay (s) | | 12.3 | 10.5 | | 32.9 | |
| Approach LOS | | B | B | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 15.4 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.56 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 65.3% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 562 | 218 | 104 | 504 | 158 | 45 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.96 | | 1.00 | 1.00 | 0.97 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2387 | | 1788 | 2506 | 1748 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2387 | | 243 | 2506 | 1748 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 618 | 240 | 114 | 554 | 174 | 49 |
| RTOR Reduction (vph) | 21 | 0 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 837 | 0 | 114 | 554 | 207 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1138 | | 116 | 1195 | 645 | |
| v/s Ratio Prot | 0.35 | | | 0.22 | c0.12 | |
| v/s Ratio Perm | | | c0.47 | | | |
| v/c Ratio | 0.74 | | 0.98 | 0.46 | 0.32 | |
| Uniform Delay, d1 | 13.7 | | 16.7 | 11.4 | 14.7 | |
| Progression Factor | 1.28 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.5 | | 79.1 | 1.3 | 1.3 | |
| Delay (s) | 21.0 | | 95.8 | 12.7 | 16.0 | |
| Level of Service | C | | F | B | B | |
| Approach Delay (s) | 21.0 | | | 26.9 | 16.0 | |
| Approach LOS | C | | | C | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 22.6 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.69 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 67.3% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 823 | 32 | 94 | 587 | 1 | 48 | 0 | 121 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.42 | 1.00 | 1.00 | 0.28 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 833 | 3431 | 1479 | 470 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 1 | 857 | 33 | 98 | 611 | 1 | 50 | 0 | 126 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 114 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 857 | 22 | 98 | 611 | 1 | 0 | 50 | 12 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 55.8 | 55.8 | 55.8 | 68.7 | 68.7 | 68.7 | | 8.3 | 8.3 | | | |
| Effective Green, g (s) | 55.8 | 55.8 | 55.8 | 68.7 | 68.7 | 68.7 | | 8.3 | 8.3 | | | |
| Actuated g/C Ratio | 0.66 | 0.66 | 0.66 | 0.81 | 0.81 | 0.81 | | 0.10 | 0.10 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 547 | 2252 | 971 | 510 | 2683 | 1237 | | 151 | 146 | | | |
| v/s Ratio Prot | | c0.25 | | 0.02 | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.01 | 0.13 | | 0.00 | | c0.03 | 0.01 | | | |
| v/c Ratio | 0.00 | 0.38 | 0.02 | 0.19 | 0.23 | 0.00 | | 0.33 | 0.08 | | | |
| Uniform Delay, d1 | 5.0 | 6.7 | 5.1 | 2.2 | 1.9 | 1.6 | | 35.8 | 34.9 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 0.5 | 0.0 | 0.2 | 0.0 | 0.0 | | 1.3 | 0.2 | | | |
| Delay (s) | 5.0 | 7.2 | 5.1 | 2.4 | 2.0 | 1.6 | | 37.1 | 35.1 | | | |
| Level of Service | A | | A | A | A | A | | D | D | | | |
| Approach Delay (s) | | 7.1 | | | 2.0 | | | 35.7 | | | 0.0 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.9 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 44.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 8 | 822 | 691 | 25 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1532 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2931 | 3083 | | 1532 | |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 9 | 884 | 743 | 27 | 76 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 893 | 767 | 0 | 83 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1075 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.25 | | c0.05 | |
| v/s Ratio Perm | | c0.30 | | | | |
| v/c Ratio | | 0.83 | 0.35 | | 0.69 | |
| Uniform Delay, d1 | | 26.0 | 5.0 | | 40.5 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 7.5 | 0.3 | | 28.5 | |
| Delay (s) | | 33.4 | 0.3 | | 68.9 | |
| Level of Service | | C | A | | E | |
| Approach Delay (s) | | 33.4 | 0.3 | | 68.9 | |
| Approach LOS | | C | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 20.7 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.64 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 42.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

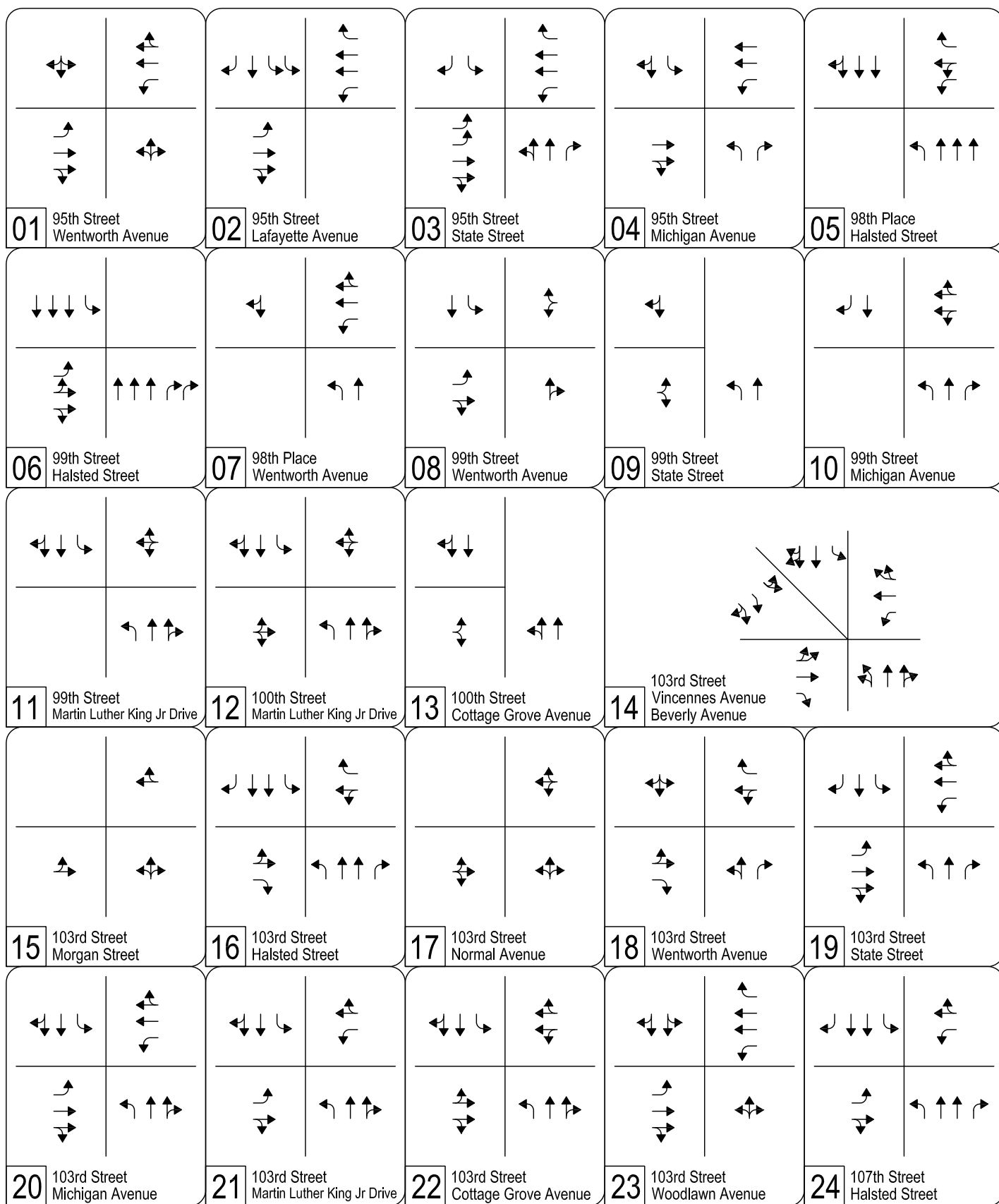
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 37 | 462 | 0 | 1 | 498 | 34 | 3 | 2 | 27 | 156 | 0 | 103 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1774 | | | 3339 | | | 1466 | | | 1669 | 1348 |
| Flt Permitted | | 0.93 | | | 0.95 | | | 0.97 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1649 | | | 3189 | | | 1435 | | | 1556 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 513 | 0 | 1 | 553 | 38 | 3 | 2 | 30 | 173 | 0 | 114 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 27 | 0 | 0 | 0 | 76 |
| Lane Group Flow (vph) | 0 | 554 | 0 | 0 | 586 | 0 | 0 | 8 | 0 | 0 | 173 | 38 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | pm+pt | | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 601 | | | 1713 | | | 152 | | | 479 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.07 | |
| v/s Ratio Perm | | c0.34 | | | 0.12 | | | 0.01 | | | c0.04 | 0.03 |
| v/c Ratio | | 0.92 | | | 0.34 | | | 0.05 | | | 0.36 | 0.08 |
| Uniform Delay, d1 | | 25.8 | | | 11.5 | | | 34.2 | | | 23.7 | 19.7 |
| Progression Factor | | 1.00 | | | 0.91 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 21.8 | | | 0.3 | | | 0.7 | | | 2.1 | 0.4 |
| Delay (s) | | 47.6 | | | 10.7 | | | 34.8 | | | 25.8 | 20.0 |
| Level of Service | | D | | | B | | | C | | | C | C |
| Approach Delay (s) | | 47.6 | | | 10.7 | | | 34.8 | | | 23.5 | |
| Approach LOS | | D | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 69.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

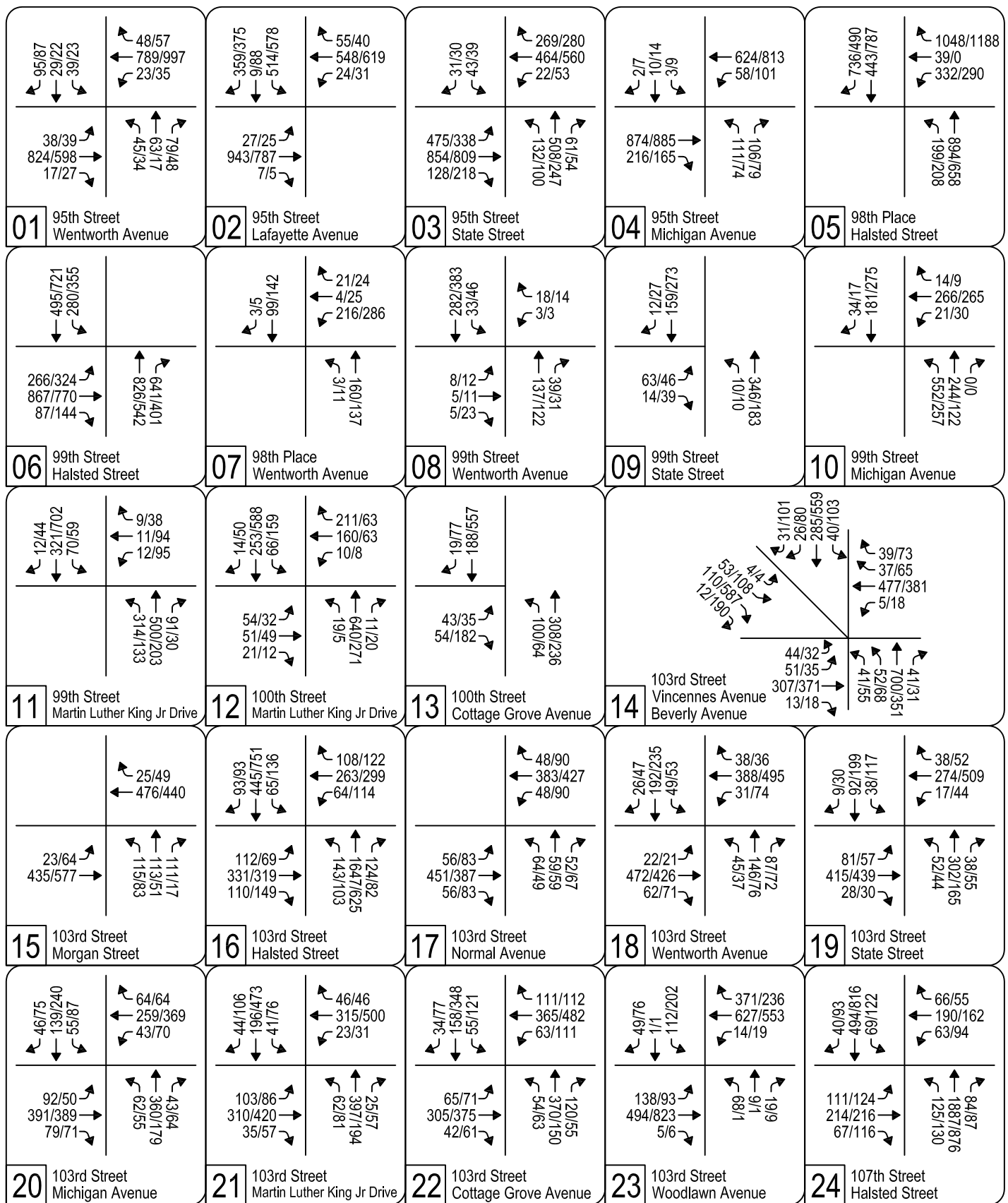
Appendix B

No Build Alternative



| | | | | |
|---|--|--|---|--|
| | | | | |
| 25 107th Street Wentworth Avenue | 26 107th Street State Street | 27 107th Street Michigan Avenue | 28 107th Street Martin Luther King Jr Drive | 29 107th Street Cottage Grove Avenue |
| | | | | |
| 30 111th Street Marshfield Avenue | 31 111th Street Hamlet Avenue | 32 112th Place Marshfield Avenue | 33 112th Place Hamlet Avenue | 34 111th Street Halsted Street |
| | | | | |
| 35 111th Street Normal Avenue | 36 111th Street Wentworth Avenue | 37 111th Street State Street | 38 111th Street Michigan Avenue | 39 111th Street Indiana Avenue |
| | | | | |
| 40 111th Street Martin Luther King Jr Drive | 41 111th Street Cottage Grove Avenue | 42 111th Street Ellis Avenue | 43 111th Street Doty Road | 44 111th Street I-94 Eastbound Ramps |
| | | | | |
| 45 111th Street I-94 Westbound Ramps | 46 115th Street Marshfield Avenue | 47 115th Street Ashland Avenue | 48 115th Street Racine Road | 49 115th Street Halsted Street |

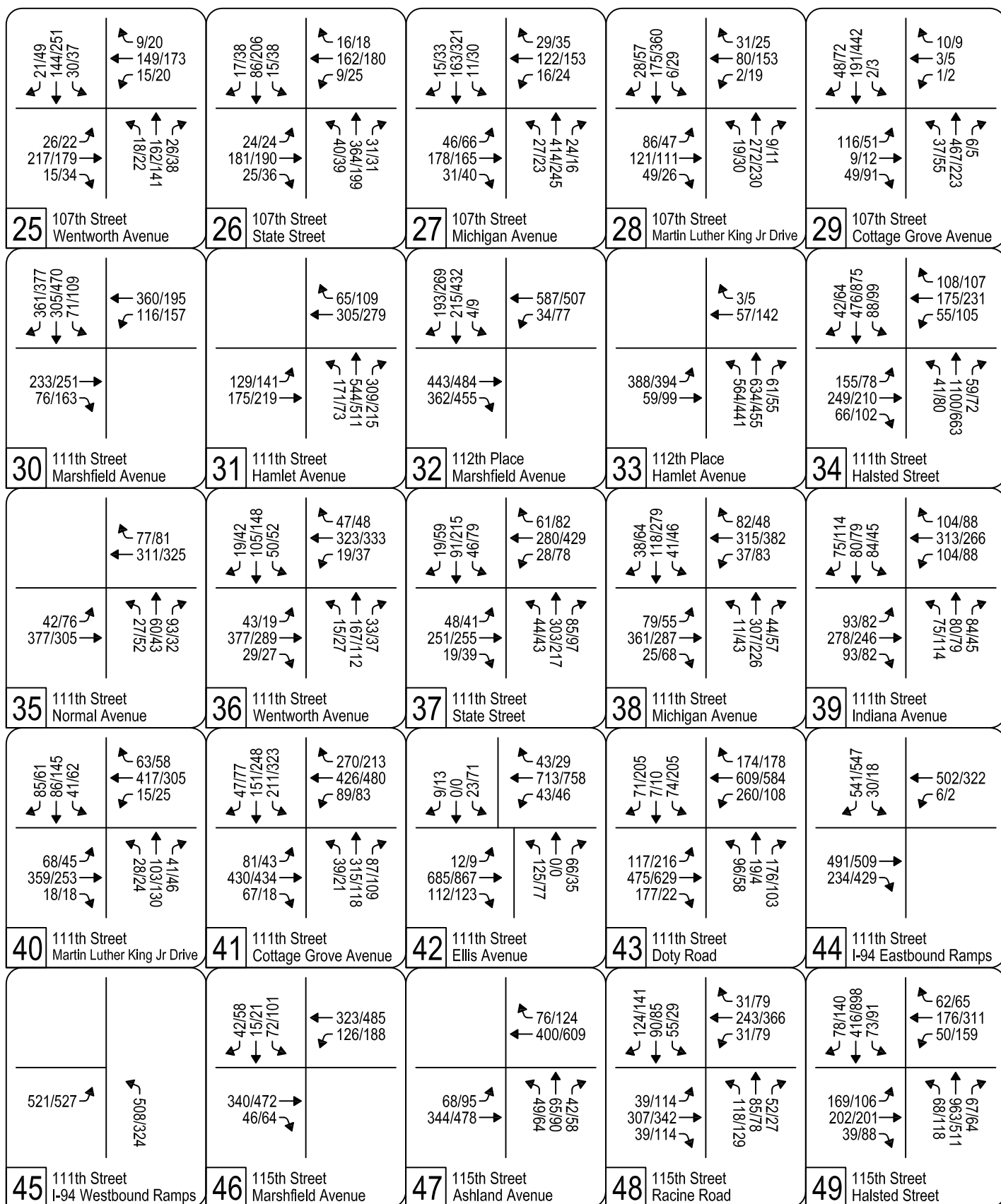
| | | | | |
|--|---|---|--------------------------------------|--|
| | | | | |
| 50 111th Street Wentworth Avenue | 51 115th Street State Street | 52 115th Street Michigan Avenue | 53 115th Street Indiana Avenue | 54 115th Street Martin Luther King Jr Drive |
| | | | | |
| 55 115th Street Cottage Grove Avenue | 56 115th Street I-94 Eastbound Ramps | 57 115th Street I-94 Westbound Ramps | 58 119th Street Marshfield Avenue | 59 119th Street Ashland Avenue |
| | | | | |
| 60 119th Street Halsted Street | 61 119th Street Wentworth Avenue | 62 119th Street State Street | 63 119th Street Michigan Avenue | 64 127th Street Paulina Street |
| | | | | |
| 65 127th Street Marshfield Avenue | 66 127th Street Ashland Avenue | 67 Vermont Street Ashland Avenue | 68 127th Street Halsted Street | 69 Vermont Street Halsted Street |
| | | | | |
| 70 127th Street/Vermont Street/Wallace Street | 71 127th Street State Street | 72 127th Street Michigan Avenue | 73 130th Street Indiana Avenue | 74 130th Street Ellis Avenue |



No Build (2026) Intersection Traffic Volumes

Page 1 of 3

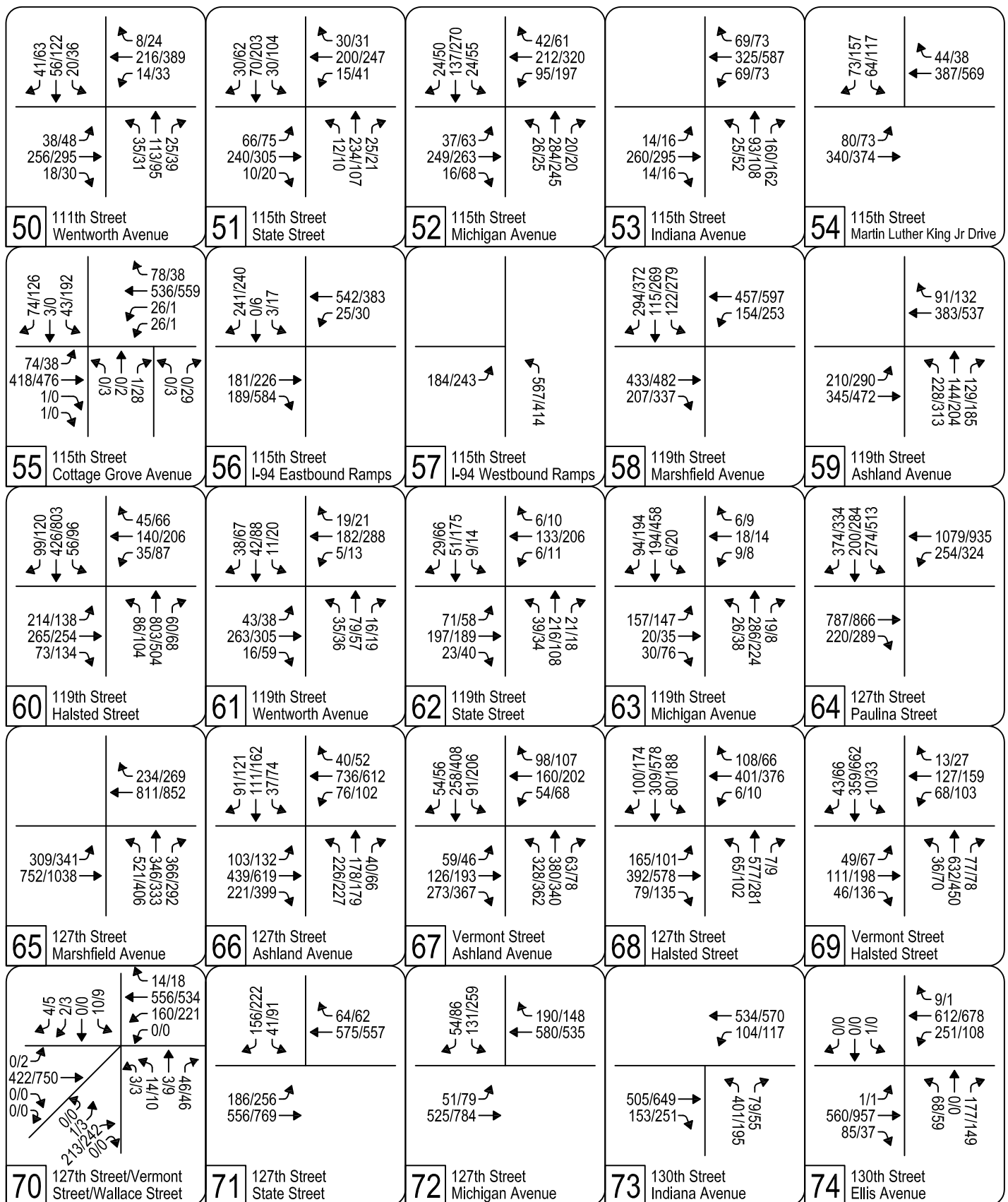
Legend: AM/PM Peak Hour Volumes



No Build (2026) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



No Build (2026) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 38 | 824 | 17 | 23 | 789 | 48 | 45 | 63 | 79 | 39 | 29 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.92 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1416 | 2976 | | 1592 | 2978 | | | 1752 | | | 1663 | |
| Flt Permitted | 0.26 | 1.00 | | 0.26 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 384 | 2976 | | 430 | 2978 | | | 1598 | | | 1515 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 867 | 18 | 24 | 831 | 51 | 47 | 66 | 83 | 41 | 31 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 41 | 0 | 0 | 63 | 0 |
| Lane Group Flow (vph) | 40 | 883 | 0 | 24 | 875 | 0 | 0 | 155 | 0 | 0 | 109 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 201 | 1557 | | 225 | 1558 | | | 565 | | | 536 | |
| v/s Ratio Prot | | c0.30 | | | 0.29 | | | | | | | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | | c0.10 | | | 0.07 | |
| v/c Ratio | 0.20 | 0.57 | | 0.11 | 0.56 | | | 0.27 | | | 0.20 | |
| Uniform Delay, d1 | 8.3 | 10.5 | | 7.8 | 10.5 | | | 15.0 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.81 | 1.13 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.2 | 1.5 | | 0.8 | 1.3 | | | 1.2 | | | 0.9 | |
| Delay (s) | 10.5 | 12.0 | | 7.2 | 13.1 | | | 16.2 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 11.9 | | | 12.9 | | | 16.2 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 53.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 943 | 7 | 24 | 548 | 55 | 0 | 0 | 0 | 514 | 9 | 359 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 776 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 355 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 993 | 7 | 25 | 577 | 58 | 0 | 0 | 0 | 541 | 9 | 378 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 999 | 0 | 25 | 577 | 33 | 0 | 0 | 0 | 541 | 9 | 206 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 163 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.30 | | 0.01 | c0.18 | | | | | c0.17 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.15 |
| v/c Ratio | 0.17 | 0.92 | | 0.04 | 0.33 | 0.11 | | | | 0.76 | 0.03 | 0.64 |
| Uniform Delay, d1 | 31.6 | 41.8 | | 15.1 | 15.3 | 13.3 | | | | 46.6 | 38.7 | 45.1 |
| Progression Factor | 0.80 | 0.82 | | 0.30 | 0.63 | 1.55 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 12.2 | | 0.1 | 0.3 | 0.5 | | | | 7.3 | 0.2 | 9.2 |
| Delay (s) | 27.3 | 46.7 | | 4.6 | 10.0 | 21.2 | | | | 53.9 | 38.9 | 54.3 |
| Level of Service | C | D | | A | A | C | | | | D | D | D |
| Approach Delay (s) | | 46.2 | | | 10.8 | | | 0.0 | | | 54.0 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 51.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 475 | 854 | 128 | 22 | 464 | 269 | 132 | 508 | 61 | 43 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 500 | 899 | 135 | 23 | 488 | 283 | 139 | 535 | 64 | 45 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 161 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 500 | 1026 | 0 | 23 | 488 | 122 | 0 | 674 | 39 | 45 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.33 | | 0.01 | c0.17 | | | c0.20 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.13 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.47 | 0.66 | | 0.21 | 0.70 | 0.54 | | 0.88 | 0.12 | 0.85 | | 0.05 |
| Uniform Delay, d1 | 34.5 | 24.3 | | 57.2 | 45.3 | 43.3 | | 48.3 | 39.5 | 60.4 | | 57.4 |
| Progression Factor | 0.75 | 0.19 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 5.8 | 9.0 | | 14.1 | 0.7 | 70.0 | | 0.4 |
| Delay (s) | 26.6 | 5.7 | | 61.6 | 51.0 | 52.3 | | 59.8 | 36.2 | 130.4 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.5 | | | 51.8 | | | 57.7 | | | 99.7 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.2 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 71.9% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 874 | 216 | 58 | 624 | 0 | 111 | 0 | 106 | 3 | 10 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1934 | |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 283 | 3005 | | 1096 | | 1465 | 1803 | 1934 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 971 | 240 | 64 | 693 | 0 | 123 | 0 | 118 | 3 | 11 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1189 | 0 | 64 | 693 | 0 | 123 | 0 | 38 | 3 | 12 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1716 | | 170 | 1803 | | 351 | | 469 | | 577 | 619 |
| v/s Ratio Prot | | c0.42 | | | 0.23 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.23 | | | c0.11 | | 0.03 | | 0.00 | |
| v/c Ratio | | 0.69 | | 0.38 | 0.38 | | 0.35 | | 0.08 | | 0.01 | 0.02 |
| Uniform Delay, d1 | | 13.7 | | 10.3 | 10.4 | | 26.0 | | 23.7 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.3 | | 6.3 | 0.6 | | 2.7 | | 0.3 | | 0.0 | 0.1 |
| Delay (s) | | 16.0 | | 16.6 | 11.0 | | 28.8 | | 24.1 | | 23.2 | 23.3 |
| Level of Service | | B | | B | B | | C | | C | | C | C |
| Approach Delay (s) | | 16.0 | | | 11.5 | | | 26.5 | | | | 23.3 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.7% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 332 | 39 | 1048 | 199 | 894 | 0 | 0 | 443 | 736 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3928 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3928 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 339 | 40 | 1069 | 203 | 912 | 0 | 0 | 452 | 751 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 339 | 40 | 1069 | 203 | 912 | 0 | 0 | 1203 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1160 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.31 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.72 | | | | | | |
| v/c Ratio | | | | 0.75 | 0.08 | 2.53 | 0.43 | 0.33 | | | 1.87dr | |
| Uniform Delay, d1 | | | | 33.5 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.65 | 2.37 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.1 | 0.3 | 694.2 | 2.0 | 0.2 | | | 36.5 | |
| Delay (s) | | | | 44.6 | 27.1 | 731.7 | 21.2 | 21.9 | | | 73.5 | |
| Level of Service | | | | D | C | F | C | C | | | E | |
| Approach Delay (s) | | 0.0 | | | 551.4 | | | 21.8 | | | 73.5 | |
| Approach LOS | | A | | | F | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 241.9 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.31 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 94.4% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 266 | 867 | 87 | 0 | 0 | 0 | 0 | 826 | 641 | 280 | 495 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 274 | 894 | 90 | 0 | 0 | 0 | 0 | 852 | 661 | 289 | 510 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 247 | 1004 | 0 | 0 | 0 | 0 | 0 | 852 | 661 | 289 | 510 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | | | | Perm | Prot | |
| Protected Phases | 4 | | | | | | 2 | | | 1 6 | | |
| Permitted Phases | 4 | | | | | | | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1032 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | 0.20 | | | c0.18 0.11 | | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | c0.30 | | | | |
| v/c Ratio | 0.51 | 0.97 | | | | | | 0.73 | 1.13 | 0.62 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.0 | | | | | | 35.1 | 38.5 | 31.9 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.44 | 0.47 | 1.06 | 0.44 | |
| Incremental Delay, d2 | 3.8 | 22.2 | | | | | | 0.4 | 62.5 | 2.5 | 0.1 | |
| Delay (s) | 32.5 | 57.3 | | | | | | 15.7 | 80.4 | 36.4 | 4.4 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | 52.4 | | | | 0.0 | | | 44.0 | | | 16.0 | |
| Approach LOS | D | | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.7 | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | Sum of lost time (s) | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 94.4% | | ICU Level of Service | | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 216 | 4 | 21 | 3 | 160 | 0 | 0 | 99 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1958 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.59 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 805 | 1882 | | | 1958 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 240 | 4 | 23 | 3 | 178 | 0 | 0 | 110 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 240 | 9 | 0 | 3 | 178 | 0 | 0 | 112 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | 513 | 1107 | | | 1060 | |
| v/s Ratio Prot | | | | | 0.00 | | 0.00 | c0.09 | | | 0.06 | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | 0.01 | 0.16 | | | 0.11 | |
| Uniform Delay, d1 | | | | 23.3 | 19.9 | | 9.7 | 8.0 | | | 9.5 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.04 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | 0.0 | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.6 | 19.9 | | 10.1 | 9.7 | | | 9.7 | |
| Level of Service | | | | C | B | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 25.9 | | | 9.7 | | | 9.7 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 8 | 5 | 5 | 3 | 0 | 18 | 0 | 137 | 39 | 33 | 282 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.88 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1578 | | | 1687 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.98 | | | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1809 | | | 1565 | | | 1687 | | 1022 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 3 | 0 | 19 | 0 | 144 | 41 | 35 | 297 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 9 | 0 | 0 | 173 | 0 | 35 | 297 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 575 | | | 497 | | | 794 | | 648 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.10 | | 0.00 | c0.17 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.02 | | | 0.22 | | 0.05 | 0.29 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 19.9 | | | 13.3 | | 8.4 | 8.7 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.92 | 0.84 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.6 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.0 | | | 13.9 | | 7.9 | 7.9 | |
| Level of Service | B | B | | | B | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.0 | | | 13.9 | | | 7.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.19 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

No Build (2026) AM Peak
WRH





Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 14 | 10 | 346 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1791 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1791 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 16 | 11 | 384 | 177 | 13 |
| RTOR Reduction (vph) | 11 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 75 | 0 | 11 | 384 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 579 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.39 | 0.21 | |
| Uniform Delay, d1 | 15.5 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.17 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.5 | |
| Delay (s) | 16.0 | | 2.1 | 5.3 | 9.0 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.2 | 9.0 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 21 | 266 | 14 | 552 | 244 | 0 | 0 | 181 | 34 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3741 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.59 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3741 | | 1025 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 23 | 296 | 16 | 613 | 271 | 0 | 0 | 201 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 331 | 0 | 613 | 271 | 0 | 0 | 201 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1144 | | 690 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.10 | 0.15 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.43 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.89 | 0.26 | | | 0.28 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 16.6 | 8.0 | | | 14.9 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 15.8 | 0.6 | | | 1.0 | 0.1 |
| Delay (s) | | | | | 23.1 | | 32.4 | 8.6 | | | 15.8 | 13.3 |
| Level of Service | | | | | C | | C | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 25.1 | | | 15.4 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.1 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.2% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 12 | 11 | 9 | 314 | 500 | 91 | 70 | 321 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1794 | | 1691 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.52 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | | | | 1794 | | 919 | 3237 | | 600 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 13 | 12 | 10 | 349 | 556 | 101 | 78 | 357 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 28 | 0 | 349 | 637 | 0 | 78 | 367 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 550 | | 574 | 1467 | | 431 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.20 | | 0.02 | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.28 | | | 0.08 | | |
| v/c Ratio | | | | | 0.05 | | 0.61 | 0.43 | | 0.18 | 0.24 | |
| Uniform Delay, d1 | | | | | 18.3 | | 12.9 | 14.0 | | 11.8 | 12.6 | |
| Progression Factor | | | | | 1.00 | | 0.71 | 0.73 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 4.4 | 0.9 | | 0.9 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 13.6 | 11.0 | | 12.7 | 13.0 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 11.9 | | | 12.9 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 54 | 51 | 21 | 10 | 160 | 211 | 19 | 640 | 11 | 66 | 253 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1949 | | | 1626 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.71 | | | 0.99 | | 0.58 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | | 1411 | | | 1617 | | 973 | 3232 | | 606 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 54 | 22 | 11 | 168 | 222 | 20 | 674 | 12 | 69 | 266 | 15 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 124 | 0 | 0 | 342 | 0 | 20 | 684 | 0 | 69 | 276 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 470 | | | 539 | | 545 | 1810 | | 339 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.21 | | | | 0.09 |
| v/s Ratio Perm | | 0.09 | | | c0.21 | | 0.02 | | | 0.11 | | |
| v/c Ratio | | 0.26 | | | 0.63 | | 0.04 | 0.38 | | 0.20 | 0.16 | |
| Uniform Delay, d1 | | 18.3 | | | 21.1 | | 7.4 | 9.2 | | 8.2 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.15 | 0.05 | |
| Incremental Delay, d2 | | 1.4 | | | 5.6 | | 0.1 | 0.6 | | 1.3 | 0.2 | |
| Delay (s) | | 19.6 | | | 26.7 | | 7.5 | 9.8 | | 2.5 | 0.6 | |
| Level of Service | | B | | | C | | A | A | | A | A | |
| Approach Delay (s) | | 19.6 | | | 26.7 | | | 9.7 | | | 1.0 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.9 | | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | 0.47 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | 66.7% | | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 43 | 54 | 100 | 308 | 188 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 48 | 60 | 111 | 342 | 209 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 108 | 225 | 228 | 139 | 91 | |
| Volume Left (vph) | 48 | 111 | 0 | 0 | 0 | |
| Volume Right (vph) | 60 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.09 | -0.08 | |
| Departure Headway (s) | 5.2 | 5.4 | 5.1 | 5.3 | 5.2 | |
| Degree Utilization, x | 0.16 | 0.34 | 0.32 | 0.21 | 0.13 | |
| Capacity (veh/h) | 635 | 657 | 688 | 648 | 668 | |
| Control Delay (s) | 9.2 | 9.8 | 9.3 | 8.5 | 7.8 | |
| Approach Delay (s) | 9.2 | 9.6 | | 8.2 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.1 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 34.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 44 | 51 | 307 | 13 | 5 | 477 | 37 | 39 | 41 | 52 | 700 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frbp, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3292 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.56 | 1.00 | 1.00 | | | 0.41 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 1000 | 1731 | 1487 | | | 737 | 3292 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 57 | 341 | 14 | 6 | 530 | 41 | 43 | 46 | 58 | 778 | 46 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 30 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 106 | 341 | 7 | 6 | 530 | 54 | 0 | 0 | 104 | 820 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 305 | 528 | 453 | | | 175 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.20 | | | c0.31 | | | | | c0.25 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.14 | | |
| v/c Ratio | | 0.38 | 0.41 | 0.01 | 0.02 | 1.00 | 0.12 | | | 0.59 | 1.05 | |
| Uniform Delay, d1 | | 20.1 | 17.9 | 14.5 | 25.5 | 36.5 | 26.3 | | | 35.5 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 1.5 | 0.0 | 0.1 | 40.1 | 0.5 | | | 14.0 | 44.9 | |
| Delay (s) | | 24.0 | 19.5 | 14.5 | 25.6 | 76.6 | 26.9 | | | 49.5 | 84.9 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.4 | | | 69.4 | | | | | 80.9 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.1 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 78.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 40 | 285 | 26 | 31 | 4 | 53 | 110 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3280 | | | | 1710 | 2622 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3280 | | | | 1710 | 2622 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 44 | 317 | 29 | 34 | 4 | 59 | 122 | 13 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 44 | 373 | 0 | 0 | 0 | 63 | 128 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.11 | | | | 0.04 | | |
| v/s Ratio Perm | 0.15 | | | | | | c0.05 | |
| v/c Ratio | 0.65 | 0.49 | | | | 0.22 | 0.29 | |
| Uniform Delay, d1 | 36.3 | 34.8 | | | | 37.9 | 38.3 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 39.0 | 2.2 | | | | 1.8 | 1.7 | |
| Delay (s) | 75.3 | 37.0 | | | | 39.6 | 40.0 | |
| Level of Service | E | D | | | | D | D | |
| Approach Delay (s) | | 41.0 | | | | 39.9 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 23 | 435 | 0 | 0 | 476 | 25 | 115 | 113 | 111 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1773 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1596 | | | 1930 | | | 1773 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 26 | 483 | 0 | 0 | 529 | 28 | 128 | 126 | 123 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 509 | 0 | 0 | 557 | 0 | 0 | 377 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 761 | | | 920 | | | 709 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.32 | | | | | | 0.21 | | | | |
| v/c Ratio | | 0.67 | | | 0.61 | | | 0.53 | | | | |
| Uniform Delay, d1 | | 13.1 | | | 12.5 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.6 | | | 3.0 | | | 2.8 | | | | |
| Delay (s) | | 17.7 | | | 15.5 | | | 17.7 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 17.7 | | | 15.5 | | | 17.7 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 70.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 112 | 331 | 110 | 64 | 263 | 108 | 143 | 1647 | 124 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1919 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.67 | 1.00 | | 0.65 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1293 | 1426 | | 1267 | 1396 | 625 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 348 | 116 | 67 | 277 | 114 | 151 | 1734 | 131 | 68 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 68 | 0 | 0 | 67 | 0 | 0 | 29 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 466 | 48 | 0 | 344 | 47 | 151 | 1734 | 102 | 68 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.51 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 530 | 584 | | 519 | 572 | 389 | 1310 | 543 | 147 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.56 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.36 | 0.03 | | 0.27 | 0.03 | 0.16 | | 0.08 | 0.19 | | 0.03 |
| v/c Ratio | | 0.88 | 0.08 | | 0.66 | 0.08 | 0.39 | 1.32 | 0.19 | 0.46 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 28.6 | 18.9 | | 25.1 | 18.9 | 14.6 | 30.3 | 19.0 | 23.1 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.09 | 0.78 | 0.45 |
| Incremental Delay, d2 | | 15.3 | 0.3 | | 6.5 | 0.3 | 0.6 | 151.1 | 0.8 | 2.2 | 0.9 | 0.3 |
| Delay (s) | | 43.9 | 19.2 | | 31.7 | 19.2 | 15.3 | 181.4 | 19.8 | 27.3 | 18.3 | 9.0 |
| Level of Service | | D | B | | C | B | B | F | B | C | B | A |
| Approach Delay (s) | | 39.0 | | | 28.6 | | | 158.4 | | | 17.8 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 99.3 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 1.06 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 108.5% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

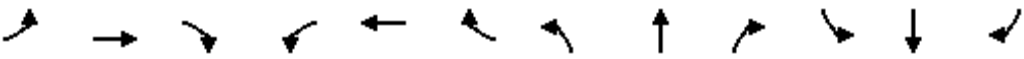
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 56 | 451 | 56 | 48 | 383 | 48 | 64 | 59 | 52 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1627 | | | 1778 | | | | |
| Flt Permitted | | 0.92 | | | 0.91 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1496 | | | 1484 | | | 1778 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 501 | 62 | 53 | 426 | 53 | 71 | 66 | 58 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 23 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 619 | 0 | 0 | 526 | 0 | 0 | 172 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 875 | | | 868 | | | 520 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.41 | | | 0.35 | | | 0.10 | | | | |
| v/c Ratio | | 0.71 | | | 0.61 | | | 0.33 | | | | |
| Uniform Delay, d1 | | 9.6 | | | 8.7 | | | 18.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.8 | | | 3.1 | | | 1.7 | | | | |
| Delay (s) | | 14.4 | | | 11.8 | | | 19.7 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 14.4 | | | 11.8 | | | 19.7 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.58 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 59.1% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 22 | 472 | 62 | 31 | 388 | 38 | 45 | 146 | 87 | 49 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1634 | 1288 | | 1663 | 1490 | | 1776 | |
| Flt Permitted | | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.89 | 1.00 | | 0.91 | |
| Satd. Flow (perm) | | 1618 | 1255 | | 1552 | 1288 | | 1499 | 1490 | | 1636 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 23 | 497 | 65 | 33 | 408 | 40 | 47 | 154 | 92 | 52 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 28 | 0 | 0 | 17 | 0 | 0 | 63 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 520 | 37 | 0 | 441 | 23 | 0 | 201 | 29 | 0 | 276 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 928 | 720 | | 890 | 738 | | 480 | 477 | | 524 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | 0.03 | | 0.28 | 0.02 | | 0.13 | 0.02 | | c0.17 | |
| v/c Ratio | | 0.56 | 0.05 | | 0.50 | 0.03 | | 0.42 | 0.06 | | 0.53 | |
| Uniform Delay, d1 | | 10.1 | 7.0 | | 9.5 | 7.0 | | 20.0 | 17.7 | | 20.8 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.4 | 0.1 | | 2.0 | 0.1 | | 2.7 | 0.2 | | 3.7 | |
| Delay (s) | | 12.5 | 7.2 | | 11.5 | 7.0 | | 22.7 | 17.9 | | 24.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 11.9 | | | 11.1 | | | 21.2 | | | 24.6 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 87.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |












No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 81 | 415 | 28 | 17 | 274 | 38 | 52 | 302 | 38 | 38 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1462 | 2990 | | 1459 | 3528 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.54 | 1.00 | | 0.45 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 838 | 2990 | | 685 | 3528 | | 1116 | 1647 | 1301 | 722 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 461 | 31 | 19 | 304 | 42 | 58 | 336 | 42 | 42 | 102 | 10 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 17 | 0 | 0 | 0 | 22 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 90 | 485 | 0 | 19 | 329 | 0 | 58 | 336 | 20 | 42 | 102 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 400 | 1426 | | 327 | 1683 | | 446 | 659 | 520 | 289 | 616 | 462 |
| v/s Ratio Prot | | c0.16 | | | 0.09 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.23 | 0.34 | | 0.06 | 0.20 | | 0.13 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 10.6 | | 9.1 | 9.8 | | 12.3 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.64 | 0.78 | 0.37 | 0.52 | 0.52 | 0.28 |
| Incremental Delay, d2 | 1.3 | 0.6 | | 0.3 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.0 | 0.6 | 0.0 |
| Delay (s) | 11.3 | 11.3 | | 9.5 | 10.1 | | 8.5 | 14.2 | 4.5 | 7.5 | 7.1 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.3 | | | 10.0 | | | 12.5 | | | 7.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 92 | 391 | 79 | 43 | 259 | 64 | 62 | 360 | 43 | 55 | 139 | 46 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1462 | 3059 | | 1588 | 3001 | | 1540 | 3021 | | 1402 | 2789 | |
| Flt Permitted | 0.54 | 1.00 | | 0.44 | 1.00 | | 0.63 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 835 | 3059 | | 730 | 3001 | | 1021 | 3021 | | 691 | 2789 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 97 | 412 | 83 | 45 | 273 | 67 | 65 | 379 | 45 | 58 | 146 | 48 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 97 | 495 | 0 | 45 | 340 | 0 | 65 | 412 | 0 | 58 | 166 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 401 | 1468 | | 350 | 1440 | | 422 | 1249 | | 286 | 1153 | |
| v/s Ratio Prot | c0.16 | | | 0.11 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | 0.06 | | | 0.08 | | |
| v/c Ratio | 0.24 | 0.34 | | 0.13 | 0.24 | | 0.15 | 0.33 | | 0.20 | 0.14 | |
| Uniform Delay, d1 | 11.5 | 12.1 | | 10.8 | 11.4 | | 13.8 | 14.9 | | 14.1 | 13.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.4 | 0.6 | | 0.8 | 0.4 | | 0.8 | 0.7 | | 1.6 | 0.3 | |
| Delay (s) | 12.9 | 12.7 | | 11.6 | 11.8 | | 14.6 | 15.6 | | 15.7 | 14.0 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.7 | | | 11.8 | | | 15.5 | | | 14.4 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 49.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 103 | 310 | 35 | 23 | 315 | 46 | 62 | 397 | 25 | 41 | 196 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1473 | 1841 | | 1533 | 3073 | | 1372 | 2892 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | 0.60 | 1.00 | | 0.43 | 1.00 | |
| Satd. Flow (perm) | 742 | 1576 | | 748 | 1841 | | 961 | 3073 | | 622 | 2892 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 108 | 326 | 37 | 24 | 332 | 48 | 65 | 418 | 26 | 43 | 206 | 46 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 108 | 363 | 0 | 24 | 380 | 0 | 65 | 444 | 0 | 43 | 252 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 459 | 738 | | 374 | 793 | | 334 | 730 | | 199 | 633 | |
| v/s Ratio Prot | c0.01 | c0.23 | | 0.00 | 0.21 | | c0.01 | c0.14 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | | 0.05 | | |
| v/c Ratio | 0.24 | 0.49 | | 0.06 | 0.48 | | 0.19 | 0.61 | | 0.22 | 0.40 | |
| Uniform Delay, d1 | 13.0 | 15.6 | | 14.4 | 17.4 | | 21.4 | 28.9 | | 25.7 | 28.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.3 | | 0.1 | 2.1 | | 0.3 | 3.7 | | 0.5 | 1.9 | |
| Delay (s) | 13.2 | 18.0 | | 14.5 | 19.4 | | 21.7 | 32.6 | | 26.2 | 30.3 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 16.9 | | | 19.1 | | | 31.2 | | | 29.7 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 65 | 305 | 42 | 63 | 365 | 111 | 54 | 370 | 120 | 55 | 158 | 34 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2911 | | 1614 | 3156 | | 1580 | 2926 | |
| Flt Permitted | | 0.79 | | | 0.85 | | 0.62 | 1.00 | | 0.40 | 1.00 | |
| Satd. Flow (perm) | | 2786 | | | 2478 | | 1049 | 3156 | | 658 | 2926 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 339 | 47 | 70 | 406 | 123 | 60 | 411 | 133 | 61 | 176 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 458 | 0 | 0 | 599 | 0 | 60 | 544 | 0 | 61 | 214 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1263 | | | 1123 | | 462 | 1389 | | 290 | 1287 | |
| v/s Ratio Prot | | | | | | | | c0.17 | | | 0.07 | |
| v/s Ratio Perm | | 0.16 | | | c0.24 | | 0.06 | | | 0.09 | | |
| v/c Ratio | | 0.36 | | | 0.53 | | 0.13 | 0.39 | | 0.21 | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 14.8 | | 12.5 | 14.2 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | | 1.8 | | 0.6 | 0.8 | | 1.6 | 0.3 | |
| Delay (s) | | 14.2 | | | 16.6 | | 13.1 | 15.0 | | 14.6 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.2 | | | 16.6 | | | 14.8 | | | 13.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.0 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 62.3% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 138 | 494 | 5 | 14 | 627 | 371 | 68 | 9 | 19 | 112 | 1 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3143 | | 1629 | 3257 | 1457 | | 1612 | | | 3106 | |
| Flt Permitted | 0.37 | 1.00 | | 0.44 | 1.00 | 1.00 | | 0.70 | | | 0.75 | |
| Satd. Flow (perm) | 609 | 3143 | | 749 | 3257 | 1457 | | 1174 | | | 2411 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 153 | 549 | 6 | 16 | 697 | 412 | 76 | 10 | 21 | 124 | 1 | 54 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 143 | 0 | 12 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 153 | 554 | 0 | 16 | 697 | 269 | 0 | 95 | 0 | 0 | 138 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.23 | | | 0.23 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 398 | 2054 | | 489 | 2128 | 952 | | 273 | | | 562 | |
| v/s Ratio Prot | 0.18 | | | 0.21 | | | | | | | | |
| v/s Ratio Perm | c0.25 | | | 0.02 | | 0.18 | | c0.08 | | | 0.06 | |
| v/c Ratio | 0.38 | 0.27 | | 0.03 | 0.33 | 0.28 | | 0.35 | | | 0.24 | |
| Uniform Delay, d1 | 5.6 | 5.1 | | 4.3 | 5.4 | 5.2 | | 22.5 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.8 | 0.3 | | 0.1 | 0.4 | 0.7 | | 3.3 | | | 1.0 | |
| Delay (s) | 8.4 | 5.5 | | 4.4 | 5.8 | 5.9 | | 25.8 | | | 22.9 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.1 | | | 5.8 | | | | 25.8 | | | 22.9 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.4 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.4 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 54.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 67 | 63 | 190 | 66 | 125 | 1887 | 84 | 69 | 494 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1505 | | 1547 | 1589 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.34 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 625 | 1505 | | 547 | 1589 | | 617 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 71 | 66 | 200 | 69 | 132 | 1986 | 88 | 73 | 520 | 42 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 283 | 0 | 66 | 254 | 0 | 132 | 1986 | 70 | 73 | 520 | 17 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 256 | 390 | | 238 | 411 | | 352 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.65 | | c0.03 | 0.17 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.15 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.72 | | 0.28 | 0.62 | | 0.38 | 1.57 | 0.13 | 0.42 | 0.42 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.7 | | 21.8 | 27.8 | | 13.2 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.70 | 0.48 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 11.1 | | 2.9 | 6.8 | | 2.6 | 260.3 | 0.4 | 7.3 | 1.1 | 0.1 |
| Delay (s) | 28.3 | 39.9 | | 24.7 | 34.6 | | 10.7 | 277.7 | 7.9 | 25.4 | 18.9 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 36.6 | | | 32.7 | | | 250.9 | | | 19.4 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 164.9 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.10 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 93.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 26 | 217 | 15 | 15 | 149 | 9 | 18 | 162 | 26 | 30 | 144 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1852 | | | 1848 | | | 1902 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1795 | | | 1800 | | | 1856 | | | 1832 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 224 | 15 | 15 | 154 | 9 | 19 | 167 | 27 | 31 | 148 | 22 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 8 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 262 | 0 | 0 | 175 | 0 | 0 | 205 | 0 | 0 | 194 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 746 | | | 748 | | | 857 | | | 846 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.35 | | | 0.23 | | | 0.24 | | | 0.23 | |
| Uniform Delay, d1 | | 13.0 | | | 12.3 | | | 10.6 | | | 10.5 | |
| Progression Factor | | 1.00 | | | 0.59 | | | 1.07 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.7 | | | 0.6 | | | 0.6 | |
| Delay (s) | | 14.3 | | | 8.0 | | | 12.0 | | | 11.2 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.3 | | | 8.0 | | | 12.0 | | | 11.2 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 44.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 25 | 9 | 162 | 16 | 40 | 364 | 31 | 15 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3012 | | 1302 | 3049 | | 1529 | 3094 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.61 | 1.00 | | 0.68 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 967 | 3012 | | 835 | 3049 | | 1093 | 3094 | | 781 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 28 | 10 | 180 | 18 | 44 | 404 | 34 | 17 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 11 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 212 | 0 | 10 | 187 | 0 | 44 | 428 | 0 | 17 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 283 | 880 | | 244 | 891 | | 639 | 1809 | | 457 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.24 | | 0.04 | 0.21 | | 0.07 | 0.24 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.8 | 6.5 | | 5.7 | 5.8 | |
| Progression Factor | 0.71 | 0.72 | | 0.74 | 0.72 | | 0.89 | 0.94 | | 0.50 | 0.46 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.6 | 13.2 | | 12.5 | 13.0 | | 5.4 | 6.4 | | 3.0 | 2.7 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.2 | | | 13.0 | | | 6.3 | | | 2.8 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.24 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 40.0% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 31 | 16 | 122 | 29 | 27 | 414 | 24 | 11 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 2962 | | 1515 | 2886 | | | 1878 | | | 1805 | |
| Flt Permitted | 0.65 | 1.00 | | 0.61 | 1.00 | | | 0.98 | | | 0.97 | |
| Satd. Flow (perm) | 1057 | 2962 | | 968 | 2886 | | | 1840 | | | 1758 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 34 | 18 | 136 | 32 | 30 | 460 | 27 | 12 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 20 | 0 | 0 | 19 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 212 | 0 | 18 | 149 | 0 | 0 | 514 | 0 | 0 | 205 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 423 | 1185 | | 387 | 1154 | | | 878 | | | 838 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | c0.28 | | | 0.12 | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.24 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.3 | | | 12.3 | | | 10.1 | |
| Progression Factor | 1.00 | 0.91 | | 0.87 | 0.88 | | | 1.02 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 12.9 | 11.7 | | 10.6 | 11.1 | | | 15.4 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 11.9 | | | 11.1 | | | | 15.4 | | | 10.8 | |
| Approach LOS | B | | | B | | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.1 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 60.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 86 | 121 | 49 | 2 | 80 | 31 | 19 | 272 | 9 | 6 | 175 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1890 | | 1587 | 1874 | | | 1971 | | | 1932 | |
| Flt Permitted | 0.68 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1145 | 1890 | | 1001 | 1874 | | | 1934 | | | 1918 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 134 | 54 | 2 | 89 | 34 | 21 | 302 | 10 | 7 | 194 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 96 | 188 | 0 | 2 | 123 | 0 | 0 | 333 | 0 | 0 | 232 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 352 | 582 | | 308 | 577 | | | 1101 | | | 1092 | |
| v/s Ratio Prot | c0.10 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.00 | | | | c0.17 | | | 0.12 | |
| v/c Ratio | 0.27 | 0.32 | | 0.01 | 0.21 | | | 0.30 | | | 0.21 | |
| Uniform Delay, d1 | 17.0 | 17.3 | | 15.6 | 16.7 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.89 | 0.88 | | 0.87 | 0.92 | | | 0.92 | | | 1.00 | |
| Incremental Delay, d2 | 1.9 | 1.5 | | 0.0 | 0.8 | | | 0.7 | | | 0.4 | |
| Delay (s) | 17.0 | 16.6 | | 13.6 | 16.2 | | | 7.4 | | | 7.3 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 16.7 | | | 16.1 | | | 7.4 | | | 7.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 44.9% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |























No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

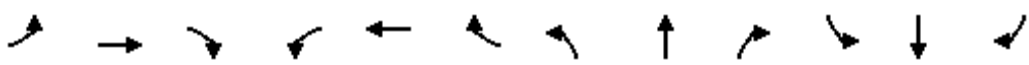
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 116 | 9 | 49 | 1 | 3 | 10 | 37 | 467 | 6 | 2 | 191 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1675 | | 1710 | 1413 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.72 | 1.00 | | 0.63 | 1.00 | 1.00 | 0.39 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1262 | 1675 | | 1288 | 1413 | | 981 | 1631 | 1392 | 682 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 129 | 10 | 54 | 1 | 3 | 11 | 41 | 519 | 7 | 2 | 212 | 53 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 8 | 0 | 0 | 0 | 3 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 129 | 25 | 0 | 1 | 6 | 0 | 41 | 519 | 4 | 2 | 212 | 32 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 464 | | 357 | 391 | | 589 | 979 | 835 | 409 | 1144 | 856 |
| v/s Ratio Prot | | 0.01 | | | 0.00 | | | c0.32 | | | 0.11 | |
| v/s Ratio Perm | c0.10 | | | 0.00 | | | 0.04 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.37 | 0.05 | | 0.00 | 0.02 | | 0.07 | 0.53 | 0.01 | 0.00 | 0.19 | 0.04 |
| Uniform Delay, d1 | 18.9 | 17.2 | | 17.0 | 17.1 | | 5.4 | 7.6 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.49 | 2.40 | | 1.00 | 1.00 | | 1.12 | 1.05 | 1.29 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.9 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.6 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.1 | 41.6 | | 17.0 | 17.1 | | 6.2 | 9.7 | 6.8 | 5.2 | 6.2 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 34.6 | | | 17.1 | | | 9.4 | | | 6.0 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.6% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013








| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 233 | 76 | 116 | 360 | 0 | 0 | 0 | 0 | 71 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 0.99 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2824 | | 1620 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2824 | | 860 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 245 | 80 | 122 | 379 | 0 | 0 | 0 | 0 | 75 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 294 | 0 | 122 | 379 | 0 | 0 | 0 | 0 | 75 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 932 | | 656 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.10 | | 0.04 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.06 | | | | | | | | |
| v/c Ratio | | 0.31 | | 0.19 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.0 | | 10.5 | 9.5 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.94 | 2.05 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.5 | 0.2 | | | | | 0.6 | 2.1 | |
| Delay (s) | | 25.9 | | 20.9 | 19.6 | | | | | 24.9 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 25.9 | | | 19.9 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|---|---|---|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 175 | 0 | 0 | 305 | 65 | 171 | 544 | 309 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1672 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 650 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 184 | 0 | 0 | 321 | 68 | 180 | 573 | 325 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 218 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 184 | 0 | 0 | 371 | 0 | 180 | 573 | 107 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 688 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.13 | | 0.10 | c0.32 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.10 | | | 0.62 | | 0.31 | 0.97 | 0.21 | | | |
| Uniform Delay, d1 | 11.7 | 9.4 | | | 35.9 | | 25.0 | 33.1 | 24.2 | | | |
| Progression Factor | 0.25 | 0.25 | | | 1.00 | | 0.74 | 0.78 | 1.91 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 4.9 | | 0.9 | 24.4 | 0.6 | | | |
| Delay (s) | 3.6 | 2.5 | | | 40.8 | | 19.4 | 50.3 | 46.8 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 3.0 | | | 40.8 | | | 44.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.0 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 443 | 362 | 34 | 587 | 0 | 0 | 0 | 0 | 4 | 215 | 193 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3106 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3106 | | 305 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 461 | 377 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 224 | 201 |
| RTOR Reduction (vph) | 0 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 133 |
| Lane Group Flow (vph) | 0 | 690 | 0 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 224 | 68 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1118 | | 400 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.22 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.62 | | 0.09 | 0.32 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.3 | | 12.3 | 10.8 | | | | | 21.8 | 23.4 | 22.9 |
| Progression Factor | | 1.00 | | 0.55 | 0.69 | | | | | 0.74 | 0.80 | 0.95 |
| Incremental Delay, d2 | | 2.6 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 28.9 | | 6.9 | 7.6 | | | | | 16.2 | 19.1 | 22.2 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 28.9 | | | 7.6 | | | 0.0 | | | 20.5 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 388 | 59 | 0 | 0 | 57 | 3 | 564 | 634 | 61 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3098 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1086 | 2344 | | | 3098 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 400 | 61 | 0 | 0 | 59 | 3 | 581 | 654 | 63 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 200 | 261 | 0 | 0 | 59 | 0 | 581 | 654 | 25 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 683 | 1447 | | | 465 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.06 | | | 0.02 | | 0.37 | c0.40 | 0.02 | | | |
| v/s Ratio Perm | c0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.29 | 0.18 | | | 0.13 | | 1.01 | 1.08 | 0.04 | | | |
| Uniform Delay, d1 | 13.9 | 13.2 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 40.1 | 59.8 | 0.2 | | | |
| Delay (s) | 4.2 | 3.6 | | | 37.4 | | 71.6 | 91.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.9 | | | 37.4 | | | 79.0 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.6 | | | | HCM Level of Service | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.0% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|------|------|----------------------|-------|-------|------|-------|------|------|
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 155 | 249 | 66 | 55 | 175 | 108 | 41 | 1100 | 59 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2835 | | | 2770 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.67 | | | 0.81 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1945 | | | 2269 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 161 | 259 | 69 | 57 | 182 | 112 | 43 | 1146 | 61 | 92 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 65 | 0 | 0 | 0 | 24 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 473 | 0 | 0 | 286 | 0 | 43 | 1146 | 37 | 92 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 887 | | | 747 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.37 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.19 | | | 0.13 | | 0.06 | | 0.03 | 0.24 | | 0.01 |
| v/c Ratio | | 0.53 | | | 0.38 | | 0.15 | 0.95 | 0.07 | 0.64 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.2 | | | 21.9 | | 14.7 | 24.9 | 16.4 | 18.5 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.31 | 0.84 | 1.39 | 1.85 | 1.66 | 3.22 |
| Incremental Delay, d2 | | 2.3 | | | 1.5 | | 0.6 | 11.2 | 0.2 | 18.2 | 1.0 | 0.1 |
| Delay (s) | | 20.5 | | | 23.4 | | 19.9 | 32.2 | 22.9 | 52.3 | 32.2 | 52.0 |
| Level of Service | | C | | | C | | B | C | C | D | C | D |
| Approach Delay (s) | | 20.5 | | | 23.4 | | | 31.3 | | | 36.5 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 78.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 42 | 377 | 0 | 0 | 311 | 77 | 27 | 60 | 93 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1668 | | | 1583 | | | | |
| Flt Permitted | | 0.93 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1597 | | | 1668 | | | 1583 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 47 | 419 | 0 | 0 | 346 | 86 | 30 | 67 | 103 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 59 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 466 | 0 | 0 | 418 | 0 | 0 | 141 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 835 | | | 872 | | | 560 | | | | |
| v/s Ratio Prot | | | | | 0.25 | | | | | | | |
| v/s Ratio Perm | | c0.29 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.56 | | | 0.48 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 10.4 | | | 9.9 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 0.47 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.7 | | | 1.7 | | | 1.1 | | | | |
| Delay (s) | | 13.1 | | | 6.4 | | | 16.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 13.1 | | | 6.4 | | | 16.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 66.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 43 | 377 | 29 | 19 | 323 | 47 | 15 | 167 | 33 | 50 | 105 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1887 | | | 1833 | | | 3186 | | | 3153 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.93 | | | 0.83 | |
| Satd. Flow (perm) | | 1768 | | | 1782 | | | 2985 | | | 2659 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 48 | 419 | 32 | 21 | 359 | 52 | 17 | 186 | 37 | 56 | 117 | 21 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 8 | 0 | 0 | 22 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 495 | 0 | 0 | 424 | 0 | 0 | 218 | 0 | 0 | 182 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 816 | | | 822 | | | 1240 | | | 1105 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.28 | | | 0.24 | | | c0.07 | | | 0.07 | |
| v/c Ratio | | 0.61 | | | 0.52 | | | 0.18 | | | 0.16 | |
| Uniform Delay, d1 | | 13.1 | | | 12.4 | | | 12.0 | | | 11.9 | |
| Progression Factor | | 0.60 | | | 0.54 | | | 0.88 | | | 0.55 | |
| Incremental Delay, d2 | | 2.9 | | | 2.3 | | | 0.3 | | | 0.3 | |
| Delay (s) | | 10.8 | | | 9.0 | | | 10.9 | | | 6.9 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 10.8 | | | 9.0 | | | 10.9 | | | 6.9 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 9.7 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.40 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 75.9% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 48 | 251 | 19 | 28 | 280 | 61 | 44 | 303 | 85 | 46 | 91 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1501 | 2937 | | 1583 | 2932 | | 1497 | 3034 | | 1594 | 2941 | |
| Flt Permitted | 0.49 | 1.00 | | 0.57 | 1.00 | | 0.67 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 781 | 2937 | | 942 | 2932 | | 1063 | 3034 | | 833 | 2941 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 279 | 21 | 31 | 311 | 68 | 49 | 337 | 94 | 51 | 101 | 21 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 28 | 0 | 0 | 39 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 53 | 291 | 0 | 31 | 351 | 0 | 49 | 392 | 0 | 51 | 112 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 264 | 994 | | 319 | 992 | | 572 | 1634 | | 449 | 1584 | |
| v/s Ratio Prot | | 0.10 | | | c0.12 | | | c0.13 | | | 0.04 | |
| v/s Ratio Perm | 0.07 | | | 0.03 | | | 0.05 | | | 0.06 | | |
| v/c Ratio | 0.20 | 0.29 | | 0.10 | 0.35 | | 0.09 | 0.24 | | 0.11 | 0.07 | |
| Uniform Delay, d1 | 15.3 | 15.8 | | 14.7 | 16.2 | | 7.3 | 7.9 | | 7.4 | 7.2 | |
| Progression Factor | 0.61 | 0.59 | | 0.77 | 0.78 | | 0.65 | 0.69 | | 1.22 | 1.22 | |
| Incremental Delay, d2 | 1.5 | 0.6 | | 0.6 | 1.0 | | 0.3 | 0.3 | | 0.5 | 0.1 | |
| Delay (s) | 10.8 | 10.0 | | 12.0 | 13.5 | | 5.0 | 5.8 | | 9.5 | 8.8 | |
| Level of Service | B | A | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 10.1 | | | 13.4 | | | 5.7 | | | 9.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.4 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.28 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 79 | 361 | 25 | 37 | 315 | 82 | 11 | 307 | 44 | 41 | 118 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 3014 | | 1334 | 3524 | | | 3435 | | | 3308 | |
| Flt Permitted | 0.50 | 1.00 | | 0.50 | 1.00 | | | 0.95 | | | 0.84 | |
| Satd. Flow (perm) | 720 | 3014 | | 707 | 3524 | | | 3255 | | | 2815 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 83 | 380 | 26 | 39 | 332 | 86 | 12 | 323 | 46 | 43 | 124 | 40 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 36 | 0 | 0 | 16 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 83 | 398 | 0 | 39 | 382 | 0 | 0 | 365 | 0 | 0 | 183 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 343 | 1437 | | 337 | 1681 | | | 1302 | | | 1126 | |
| v/s Ratio Prot | | c0.13 | | | 0.11 | | | | | | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | | c0.11 | | | 0.07 | |
| v/c Ratio | 0.24 | 0.28 | | 0.12 | 0.23 | | | 0.28 | | | 0.16 | |
| Uniform Delay, d1 | 10.1 | 10.2 | | 9.4 | 10.0 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.59 | 1.63 | | 0.81 | 0.79 | | | 0.52 | | | 0.64 | |
| Incremental Delay, d2 | 1.6 | 0.5 | | 0.6 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 17.6 | 17.2 | | 8.2 | 8.1 | | | 7.4 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.2 | | | 8.1 | | | 7.4 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  |  |
| Volume (vph) | 93 | 278 | 93 | 104 | 313 | 104 | 75 | 80 | 84 | 84 | 80 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3024 | | | 1822 | | | 1829 | |
| Flt Permitted | | 0.76 | 1.00 | | 0.77 | | | 0.82 | | | 0.79 | |
| Satd. Flow (perm) | | 1254 | 1409 | | 2353 | | | 1523 | | | 1476 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 103 | 309 | 103 | 116 | 348 | 116 | 83 | 89 | 93 | 93 | 89 | 83 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 34 | 0 | 0 | 30 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 0 | 412 | 54 | 0 | 546 | 0 | 0 | 235 | 0 | 0 | 240 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 656 | 737 | | 1231 | | | 492 | | | 477 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.04 | | 0.23 | | | 0.15 | | | c0.16 | |
| v/c Ratio | | 0.63 | 0.07 | | 0.44 | | | 0.48 | | | 0.50 | |
| Uniform Delay, d1 | | 11.0 | 7.7 | | 9.6 | | | 17.6 | | | 17.8 | |
| Progression Factor | | 2.04 | 5.53 | | 0.37 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 4.4 | 0.2 | | 1.1 | | | 3.3 | | | 3.8 | |
| Delay (s) | | 26.9 | 42.7 | | 4.7 | | | 20.9 | | | 21.5 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 30.0 | | | 4.7 | | | 20.9 | | | 21.5 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 68.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 68 | 359 | 18 | 15 | 417 | 63 | 28 | 103 | 41 | 41 | 86 | 85 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1474 | 3019 | | 1572 | 2999 | | | 3444 | | | 3422 | |
| Flt Permitted | 0.41 | 1.00 | | 0.49 | 1.00 | | | 0.89 | | | 0.88 | |
| Satd. Flow (perm) | 633 | 3019 | | 804 | 2999 | | | 3102 | | | 3035 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 399 | 20 | 17 | 463 | 70 | 31 | 114 | 46 | 46 | 96 | 94 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 25 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 76 | 413 | 0 | 17 | 515 | 0 | 0 | 166 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 273 | 1300 | | 346 | 1292 | | | 1384 | | | 1354 | |
| v/s Ratio Prot | | 0.14 | | | c0.17 | | | | | | | |
| v/s Ratio Perm | 0.12 | | | 0.02 | | | | 0.05 | | | c0.06 | |
| v/c Ratio | 0.28 | 0.32 | | 0.05 | 0.40 | | | 0.12 | | | 0.14 | |
| Uniform Delay, d1 | 12.0 | 12.2 | | 10.8 | 12.7 | | | 10.5 | | | 10.6 | |
| Progression Factor | 1.02 | 1.04 | | 1.10 | 0.92 | | | 1.01 | | | 0.72 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.2 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.3 | 13.2 | | 12.0 | 12.2 | | | 10.8 | | | 7.9 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.4 | | | 12.2 | | | 10.8 | | | 7.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 81 | 430 | 67 | 89 | 426 | 270 | 39 | 315 | 87 | 211 | 151 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | | 3179 | | | 3072 | | | 3147 | | | 3121 | |
| Flt Permitted | | 0.66 | | | 0.76 | | | 0.90 | | | 0.64 | |
| Satd. Flow (perm) | | 2125 | | | 2352 | | | 2831 | | | 2036 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 478 | 74 | 99 | 473 | 300 | 43 | 350 | 97 | 234 | 168 | 52 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 104 | 0 | 0 | 33 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 0 | 626 | 0 | 0 | 768 | 0 | 0 | 457 | 0 | 0 | 439 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 850 | | | 941 | | | 1292 | | | 626 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.29 | | | c0.33 | | | 0.13 | | | c0.22 | |
| v/c Ratio | | 0.74 | | | 0.82 | | | 0.35 | | | 0.88dl | |
| Uniform Delay, d1 | | 16.6 | | | 17.4 | | | 11.8 | | | 19.9 | |
| Progression Factor | | 1.76 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 5.6 | | | 7.7 | | | 0.8 | | | 6.4 | |
| Delay (s) | | 34.7 | | | 25.1 | | | 12.6 | | | 24.1 | |
| Level of Service | | C | | | C | | | B | | | C | |
| Approach Delay (s) | | 34.7 | | | 25.1 | | | 12.6 | | | 24.1 | |
| Approach LOS | | C | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.9 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.75 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 84.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 685 | 112 | 43 | 713 | 0 | 125 | 0 | 66 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2566 | | | 1311 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 761 | 124 | 48 | 792 | 0 | 139 | 0 | 73 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 867 | 0 | 0 | 840 | 0 | 0 | 191 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 941 | | | 233 | | | | | |
| v/s Ratio Prot | c0.29 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | c0.15 | | | | | |
| v/c Ratio | 0.45 | | | 0.89 | | | 0.82 | | | | | |
| Uniform Delay, d1 | 8.0 | | | 26.8 | | | 35.6 | | | | | |
| Progression Factor | 0.00 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 11.4 | | | 26.3 | | | | | |
| Delay (s) | 0.5 | | | 53.6 | | | 61.9 | | | | | |
| Level of Service | A | | | D | | | E | | | | | |
| Approach Delay (s) | 0.5 | | | 53.6 | | | 61.9 | | | 0.0 | | |
| Approach LOS | A | | | D | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 30.2 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.75 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 69.9% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 117 | 475 | 177 | 260 | 609 | 174 | 96 | 19 | 176 | 74 | 7 | 71 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1755 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.34 | 1.00 | | 0.23 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 536 | 3020 | | 402 | 3257 | 1457 | | 1582 | | 692 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 130 | 528 | 197 | 289 | 677 | 193 | 107 | 21 | 196 | 82 | 8 | 79 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 97 | 0 | 75 | 0 | 0 | 0 | 43 |
| Lane Group Flow (vph) | 130 | 685 | 0 | 289 | 677 | 96 | 0 | 249 | 0 | 82 | 8 | 36 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 42.0 | 32.7 | | 48.4 | 36.1 | 44.7 | | 20.0 | | 31.6 | 31.6 | 40.9 |
| Effective Green, g (s) | 42.0 | 32.7 | | 48.4 | 36.1 | 44.7 | | 20.0 | | 31.6 | 31.6 | 40.9 |
| Actuated g/C Ratio | 0.47 | 0.36 | | 0.54 | 0.40 | 0.50 | | 0.22 | | 0.35 | 0.35 | 0.45 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 352 | 1097 | | 389 | 1306 | 724 | | 352 | | 333 | 602 | 662 |
| v/s Ratio Prot | 0.04 | 0.23 | | c0.10 | 0.21 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.13 | | | c0.29 | | 0.05 | | c0.16 | | 0.06 | | 0.02 |
| v/c Ratio | 0.37 | 0.62 | | 0.74 | 0.52 | 0.13 | | 0.71 | | 0.25 | 0.01 | 0.05 |
| Uniform Delay, d1 | 14.2 | 23.6 | | 13.5 | 20.4 | 12.2 | | 32.3 | | 21.5 | 19.0 | 13.7 |
| Progression Factor | 1.92 | 1.62 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.8 | 2.5 | | 8.0 | 1.5 | 0.1 | | 6.8 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 28.0 | 40.7 | | 21.5 | 21.9 | 12.3 | | 39.1 | | 21.9 | 19.0 | 13.8 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 38.7 | | | 20.2 | | | 39.1 | | | 18.0 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 491 | 234 | 6 | 502 | 0 | 0 | 0 | 0 | 30 | 0 | 541 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 546 | 260 | 7 | 558 | 0 | 0 | 0 | 0 | 33 | 0 | 601 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 558 | | | 546 | | | 838 | 1117 | 273 | 844 | 1117 | 279 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 558 | | | 546 | | | 838 | 1117 | 273 | 844 | 1117 | 279 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 87 | 100 | 15 |
| cM capacity (veh/h) | 989 | | | 999 | | | 39 | 200 | 716 | 250 | 200 | 709 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 273 | 273 | 260 | 193 | 372 | 33 | 601 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 33 | 0 | | | | | |
| Volume Right | 0 | 0 | 260 | 0 | 0 | 0 | 601 | | | | | |
| cSH | 1700 | 1700 | 1700 | 999 | 1700 | 250 | 709 | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.15 | 0.01 | 0.22 | 0.13 | 0.85 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 11 | 243 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 21.6 | 31.5 | | | | | |
| Lane LOS | | | | A | | C | D | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 31.0 | | | | | | |
| Approach LOS | | | | | | D | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 9.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 56.9% | ICU Level of Service | | | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 521 | 0 | 508 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 579 | 0 | 564 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 289 | 289 | 564 | | | |
| Volume Left (vph) | 289 | 289 | 564 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 5.7 | | | |
| Degree Utilization, x | 0.55 | 0.55 | 0.89 | | | |
| Capacity (veh/h) | 515 | 505 | 627 | | | |
| Control Delay (s) | 16.6 | 16.6 | 38.0 | | | |
| Approach Delay (s) | 16.6 | | 38.0 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 27.2 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 52.1% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 340 | 46 | 126 | 323 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3092 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.45 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3092 | | 746 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 378 | 51 | 140 | 359 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 417 | 0 | 140 | 359 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 527 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.13 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.27 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.3 | | 11.3 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.27 | 0.25 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.6 | | 1.2 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.0 | | 4.2 | 2.4 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.0 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 33.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 344 | 0 | 0 | 400 | 76 | 49 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4420 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 656 | 3257 | | | 3073 | | | 4420 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 382 | 0 | 0 | 444 | 84 | 54 | 72 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 382 | 0 | 0 | 510 | 0 | 0 | 141 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 485 | 1839 | | | 1265 | | | 1404 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.21 | | | 0.40 | | | 0.10 | | | | |
| Uniform Delay, d1 | 12.1 | 9.1 | | | 17.6 | | | 20.4 | | | | |
| Progression Factor | 0.34 | 0.33 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.0 | | | 0.1 | | | | |
| Delay (s) | 4.7 | 3.3 | | | 18.6 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.6 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 39 | 31 | 243 | 31 | 118 | 85 | 52 | 55 | 90 | 124 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.88 | | | 0.75 | | | 0.89 | |
| Satd. Flow (perm) | | 2659 | | | 2645 | | | 1376 | | | 1571 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 341 | 43 | 34 | 270 | 34 | 131 | 94 | 58 | 61 | 100 | 138 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 414 | 0 | 0 | 325 | 0 | 0 | 269 | 0 | 0 | 251 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 941 | | | 936 | | | 677 | | | 773 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.12 | | | c0.20 | | | 0.16 | |
| v/c Ratio | | 0.44 | | | 0.35 | | | 0.40 | | | 0.33 | |
| Uniform Delay, d1 | | 16.1 | | | 15.5 | | | 10.4 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 1.0 | | | 1.7 | | | 1.1 | |
| Delay (s) | | 17.6 | | | 16.5 | | | 12.2 | | | 11.1 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.6 | | | 16.5 | | | 12.2 | | | 11.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.41 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 63.1% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 202 | 39 | 50 | 176 | 62 | 68 | 963 | 67 | 73 | 416 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.44 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 690 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 41 | 53 | 185 | 65 | 72 | 1014 | 71 | 77 | 438 | 82 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 43 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 178 | 235 | 0 | 53 | 209 | 0 | 72 | 1014 | 28 | 77 | 438 | 32 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 330 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.33 | | c0.03 | 0.15 | |
| v/s Ratio Perm | c0.15 | | | 0.04 | | | 0.08 | | 0.02 | 0.20 | | 0.03 |
| v/c Ratio | 0.49 | 0.24 | | 0.14 | 0.18 | | 0.22 | 0.86 | 0.05 | 0.53 | 0.37 | 0.06 |
| Uniform Delay, d1 | 20.6 | 20.7 | | 18.4 | 20.3 | | 14.9 | 23.9 | 16.2 | 17.2 | 18.6 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.06 | 0.61 | 0.84 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 0.8 | 0.3 | | 1.5 | 8.2 | 0.2 | 12.4 | 0.8 | 0.2 |
| Delay (s) | 25.2 | 21.3 | | 19.2 | 20.7 | | 16.4 | 32.1 | 16.4 | 47.8 | 12.2 | 13.9 |
| Level of Service | C | C | | B | C | | B | C | B | D | B | B |
| Approach Delay (s) | | 22.9 | | | 20.4 | | | 30.2 | | | 17.0 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 68.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|------|----------------------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 38 | 256 | 18 | 14 | 216 | 8 | 35 | 113 | 25 | 20 | 56 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1829 | 1382 | | 1910 | 1331 | | 1860 | 1452 | | 1810 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 269 | 19 | 15 | 227 | 8 | 37 | 119 | 26 | 21 | 59 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 0 | 309 | 9 | 0 | 242 | 4 | 0 | 156 | 11 | 0 | 80 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 844 | 638 | | 882 | 614 | | 773 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.20 | 0.02 | | 0.11 | 0.03 |
| Uniform Delay, d1 | | 11.3 | 9.5 | | 10.8 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.47 | 0.37 | | 1.38 | 1.86 | | 0.93 | 0.82 |
| Incremental Delay, d2 | | 1.2 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.8 | 3.5 | | 17.3 | 20.9 | | 11.0 | 9.3 |
| Level of Service | | B | A | | A | A | | B | C | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.7 | | | 17.8 | | | 10.4 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 54.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 240 | 10 | 15 | 200 | 30 | 12 | 234 | 25 | 30 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3022 | | 1520 | 2981 | | 1520 | 2996 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.58 | 1.00 | | 0.68 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3022 | | 929 | 2981 | | 1091 | 2996 | | 904 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 267 | 11 | 17 | 222 | 33 | 13 | 260 | 28 | 33 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 18 | 0 | 0 | 12 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 273 | 0 | 17 | 237 | 0 | 13 | 276 | 0 | 33 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1488 | | 314 | 1009 | | 453 | 1244 | | 376 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.09 | | | c0.08 | | | c0.09 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.04 | | |
| v/c Ratio | 0.45 | 0.18 | | 0.05 | 0.24 | | 0.03 | 0.22 | | 0.09 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 9.2 | | 14.5 | 15.5 | | 11.2 | 12.2 | | 11.5 | 11.5 | |
| Progression Factor | 0.83 | 0.41 | | 0.82 | 0.75 | | 0.59 | 0.66 | | 1.09 | 1.13 | |
| Incremental Delay, d2 | 8.3 | 0.3 | | 0.3 | 0.5 | | 0.1 | 0.4 | | 0.5 | 0.1 | |
| Delay (s) | 30.8 | 4.1 | | 12.3 | 12.2 | | 6.7 | 8.5 | | 13.1 | 13.1 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.6 | | | 12.2 | | | 8.4 | | | 13.1 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 35.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 249 | 16 | 95 | 212 | 42 | 26 | 284 | 20 | 24 | 137 | 24 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3012 | | 1520 | 2964 | | | 3215 | | | 3172 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | 925 | 3012 | | 1520 | 2964 | | | 2981 | | | 2842 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 277 | 18 | 106 | 236 | 47 | 29 | 316 | 22 | 27 | 152 | 27 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 25 | 0 | 0 | 7 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 41 | 287 | 0 | 106 | 258 | 0 | 0 | 360 | 0 | 0 | 189 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 285 | 927 | | 140 | 1322 | | | 1147 | | | 1093 | |
| v/s Ratio Prot | c0.10 | | | c0.07 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.12 | | | 0.07 | | |
| v/c Ratio | 0.14 | 0.31 | | 0.76 | 0.19 | | | 0.31 | | | 0.17 | |
| Uniform Delay, d1 | 16.3 | 17.2 | | 28.8 | 10.9 | | | 14.0 | | | 13.2 | |
| Progression Factor | 0.61 | 0.60 | | 1.35 | 0.97 | | | 0.70 | | | 0.76 | |
| Incremental Delay, d2 | 1.1 | 0.9 | | 27.5 | 0.3 | | | 0.7 | | | 0.3 | |
| Delay (s) | 11.0 | 11.2 | | 66.3 | 10.8 | | | 10.4 | | | 10.4 | |
| Level of Service | B | B | | E | B | | | B | | | B | |
| Approach Delay (s) | 11.1 | | | 25.9 | | | 10.4 | | | 10.4 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | HCM Level of Service | | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | 11.0 | | | | |
| Intersection Capacity Utilization | | | 42.0% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

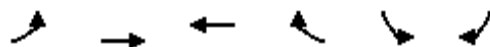
1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 260 | 14 | 69 | 325 | 69 | 25 | 93 | 160 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.91 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1556 | | | 3160 | | | | |
| Flt Permitted | | 0.97 | | | 0.91 | | | 1.00 | | | | |
| Satd. Flow (perm) | | 1548 | | | 1426 | | | 3160 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 16 | 289 | 16 | 77 | 361 | 77 | 28 | 103 | 178 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 319 | 0 | 0 | 507 | 0 | 0 | 170 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 42.6 | | | 42.6 | | | 14.4 | | | | |
| Effective Green, g (s) | | 42.6 | | | 42.6 | | | 14.4 | | | | |
| Actuated g/C Ratio | | 0.66 | | | 0.66 | | | 0.22 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 1015 | | | 935 | | | 700 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.21 | | | 0.36 | | | 0.05 | | | | |
| v/c Ratio | | 0.31 | | | 0.54 | | | 0.24 | | | | |
| Uniform Delay, d1 | | 4.9 | | | 6.0 | | | 20.8 | | | | |
| Progression Factor | | 2.05 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.8 | | | 2.3 | | | 0.8 | | | | |
| Delay (s) | | 10.8 | | | 8.2 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 10.8 | | | 8.2 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

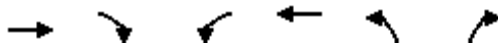


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 80 | 340 | 387 | 44 | 64 | 73 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 84 | 358 | 407 | 46 | 67 | 77 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.87 | | | | 0.87 | 0.87 |
| vC, conflicting volume | 475 | | | | 983 | 455 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 323 | | | | 906 | 300 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 92 | | | | 72 | 88 |
| cM capacity (veh/h) | 1015 | | | | 240 | 633 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 442 | 454 | 67 | 77 | | |
| Volume Left | 84 | 0 | 67 | 0 | | |
| Volume Right | 0 | 46 | 0 | 77 | | |
| cSH | 1015 | 1700 | 240 | 633 | | |
| Volume to Capacity | 0.08 | 0.27 | 0.28 | 0.12 | | |
| Queue Length 95th (ft) | 7 | 0 | 28 | 10 | | |
| Control Delay (s) | 2.4 | 0.0 | 25.8 | 11.5 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.4 | 0.0 | 18.2 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.6 | | | |
| Intersection Capacity Utilization | | | 62.7% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | EB | EB | WB | WB | NB | NB |
| Volume (vph) | 461 | 1 | 16 | 630 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1712 | | |
| Flt Permitted | 1.00 | | | 0.98 | | |
| Satd. Flow (perm) | 1714 | | | 1685 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 512 | 1 | 18 | 700 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 513 | 0 | 0 | 718 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 615 | | |
| v/s Ratio Prot | c0.30 | | | | | |
| v/s Ratio Perm | | | | c0.43 | | |
| v/c Ratio | 0.43 | | | 1.17 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.04 | | | 1.00 | | |
| Incremental Delay, d2 | 0.3 | | | 92.1 | | |
| Delay (s) | 0.5 | | | 119.1 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.5 | | | 119.1 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 69.7 | | HCM Level of Service | E |
| HCM Volume to Capacity ratio | | | 0.80 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 51.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 181 | 189 | 25 | 542 | 0 | 0 | 0 | 0 | 3 | 0 | 241 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 201 | 210 | 28 | 602 | 0 | 0 | 0 | 0 | 3 | 0 | 268 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 602 | | | 201 | | | 964 | 964 | 206 | 758 | 859 | 602 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 602 | | | 201 | | | 964 | 964 | 206 | 758 | 859 | 602 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 39 |
| cM capacity (veh/h) | 985 | | | 989 | | | 81 | 250 | 807 | 293 | 288 | 438 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 134 | 277 | 630 | 3 | 268 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 210 | 0 | 0 | 268 | | | | | | | |
| cSH | 1700 | 1700 | 989 | 293 | 438 | | | | | | | |
| Volume to Capacity | 0.08 | 0.16 | 0.03 | 0.01 | 0.61 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 100 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.4 | 25.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 25.3 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 56.6% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 184 | 0 | 567 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 204 | 0 | 630 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 102 | 102 | 630 | | | |
| Volume Left (vph) | 102 | 102 | 630 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.7 | 6.7 | 4.8 | | | |
| Degree Utilization, x | 0.19 | 0.19 | 0.85 | | | |
| Capacity (veh/h) | 511 | 511 | 735 | | | |
| Control Delay (s) | 10.1 | 10.1 | 28.3 | | | |
| Approach Delay (s) | 10.1 | | 28.3 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 23.8 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 45.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue
























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 433 | 207 | 154 | 457 | 0 | 0 | 0 | 0 | 122 | 115 | 294 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3692 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3692 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 456 | 218 | 162 | 481 | 0 | 0 | 0 | 0 | 128 | 121 | 309 |
| RTOR Reduction (vph) | 0 | 0 | 159 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102 | 92 |
| Lane Group Flow (vph) | 0 | 456 | 59 | 0 | 643 | 0 | 0 | 0 | 0 | 70 | 232 | 62 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.2 | 39.2 | | 73.6 | | | | | 19.3 | 19.3 | 64.5 |
| Effective Green, g (s) | | 39.2 | 39.2 | | 73.6 | | | | | 19.3 | 19.3 | 64.5 |
| Actuated g/C Ratio | | 0.25 | 0.25 | | 0.46 | | | | | 0.12 | 0.12 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 730 | 294 | | 1551 | | | | | 162 | 445 | 452 |
| v/s Ratio Prot | | c0.15 | | | c0.19 | | | | | 0.05 | c0.06 | |
| v/s Ratio Perm | | | 0.05 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.62 | 0.20 | | 0.41 | | | | | 0.43 | 0.52 | 0.14 |
| Uniform Delay, d1 | | 53.8 | 47.9 | | 28.8 | | | | | 65.3 | 66.0 | 30.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.0 | 1.5 | | 0.1 | | | | | 1.8 | 1.1 | 0.1 |
| Delay (s) | | 57.9 | 49.5 | | 0.6 | | | | | 67.1 | 67.1 | 30.3 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 55.1 | | | 0.6 | | | 0.0 | | | 57.0 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 29.9 | | |
| Intersection Capacity Utilization | | | 52.4% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   |   | | | |
| Volume (vph) | 210 | 345 | 0 | 0 | 383 | 91 | 228 | 144 | 129 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3009 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3009 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 233 | 383 | 0 | 0 | 426 | 101 | 253 | 160 | 143 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 52 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 233 | 383 | 0 | 0 | 426 | 20 | 190 | 314 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 78.4 | 78.4 | | | 32.2 | 32.2 | 22.6 | 22.6 | | | | |
| Effective Green, g (s) | 78.4 | 78.4 | | | 32.2 | 32.2 | 22.6 | 22.6 | | | | |
| Actuated g/C Ratio | 0.49 | 0.49 | | | 0.20 | 0.20 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 771 | 1649 | | | 634 | 293 | 216 | 425 | | | | |
| v/s Ratio Prot | c0.15 | 0.11 | | | c0.14 | | c0.12 | 0.10 | | | | |
| v/s Ratio Perm | | | | | | 0.01 | | | | | | |
| v/c Ratio | 0.30 | 0.23 | | | 0.67 | 0.07 | 0.88 | 0.74 | | | | |
| Uniform Delay, d1 | 24.4 | 23.5 | | | 59.0 | 51.8 | 67.4 | 65.9 | | | | |
| Progression Factor | 0.07 | 0.08 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 2.8 | 0.1 | 30.8 | 6.6 | | | | |
| Delay (s) | 2.0 | 1.9 | | | 61.8 | 51.9 | 98.1 | 72.5 | | | | |
| Level of Service | A | A | | | E | D | F | E | | | | |
| Approach Delay (s) | | 1.9 | | | 59.9 | | | 81.3 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.9 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 28.8 | | | |
| Intersection Capacity Utilization | | | 48.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 214 | 265 | 73 | 35 | 140 | 45 | 86 | 803 | 60 | 56 | 426 | 99 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1536 | 1556 | 1328 | 1595 | 1719 | | 1524 | 2990 | | 1508 | 2869 | |
| Flt Permitted | 0.52 | 1.00 | 1.00 | 0.51 | 1.00 | | 0.35 | 1.00 | | 0.16 | 1.00 | |
| Satd. Flow (perm) | 846 | 1556 | 1328 | 854 | 1719 | | 569 | 2990 | | 255 | 2869 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 225 | 279 | 77 | 37 | 147 | 47 | 91 | 845 | 63 | 59 | 448 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 12 | 0 | 0 | 6 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 225 | 279 | 27 | 37 | 182 | 0 | 91 | 902 | 0 | 59 | 530 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 387 | 557 | 461 | 314 | 541 | | 286 | 1134 | | 169 | 1088 | |
| v/s Ratio Prot | c0.04 | 0.18 | | 0.00 | 0.11 | | 0.02 | c0.30 | | c0.02 | 0.18 | |
| v/s Ratio Perm | c0.20 | | 0.02 | 0.04 | | | 0.12 | | | 0.13 | | |
| v/c Ratio | 0.58 | 0.50 | 0.06 | 0.12 | 0.34 | | 0.32 | 0.80 | | 0.35 | 0.49 | |
| Uniform Delay, d1 | 20.6 | 22.6 | 19.6 | 20.2 | 23.6 | | 16.5 | 24.8 | | 17.5 | 21.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.2 | 3.2 | 0.2 | 0.2 | 1.7 | | 0.6 | 5.8 | | 1.3 | 1.6 | |
| Delay (s) | 22.9 | 25.8 | 19.8 | 20.4 | 25.3 | | 17.1 | 30.6 | | 18.7 | 22.8 | |
| Level of Service | C | C | B | C | C | | B | C | | B | C | |
| Approach Delay (s) | | 23.8 | | | 24.5 | | | 29.4 | | | 22.4 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

No Build (2026) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Volume (vph) | 43 | 263 | 16 | 5 | 182 | 19 | 35 | 79 | 16 | 11 | 42 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1912 | | | 1846 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.99 | 1.00 | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | | 1817 | 1482 | | 1592 | 1198 | | 1794 | | | 1807 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 45 | 277 | 17 | 5 | 192 | 20 | 37 | 83 | 17 | 12 | 44 | 40 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 10 | 0 | 8 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 322 | 8 | 0 | 197 | 10 | 0 | 129 | 0 | 0 | 73 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 895 | 730 | | 784 | 590 | | 745 | | | 751 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | 0.01 | | 0.12 | 0.01 | | c0.07 | | | 0.04 | |
| v/c Ratio | | 0.36 | 0.01 | | 0.25 | 0.02 | | 0.17 | | | 0.10 | |
| Uniform Delay, d1 | | 10.2 | 8.4 | | 9.6 | 8.4 | | 12.0 | | | 11.6 | |
| Progression Factor | | 1.00 | 1.00 | | 2.02 | 2.97 | | 1.00 | | | 1.55 | |
| Incremental Delay, d2 | | 1.1 | 0.0 | | 0.8 | 0.1 | | 0.5 | | | 0.3 | |
| Delay (s) | | 11.3 | 8.5 | | 20.0 | 25.1 | | 12.5 | | | 18.2 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 11.2 | | | 20.5 | | | 12.5 | | | 18.2 | |
| Approach LOS | | B | | | C | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 14.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.27 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 54.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 71 | 197 | 23 | 6 | 133 | 6 | 39 | 216 | 21 | 9 | 51 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1663 | 1392 | | 1604 | 1497 | | 1754 | 1390 | | 1652 | |
| Flt Permitted | | 0.88 | 1.00 | | 0.99 | 1.00 | | 0.95 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 1483 | 1392 | | 1585 | 1497 | | 1681 | 1390 | | 1612 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 207 | 24 | 6 | 140 | 6 | 41 | 227 | 22 | 9 | 54 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 16 | 0 | 0 | 4 | 0 | 0 | 11 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 282 | 8 | 0 | 146 | 2 | 0 | 268 | 11 | 0 | 78 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 525 | 493 | | 561 | 530 | | 828 | 684 | | 794 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.19 | 0.01 | | 0.09 | 0.00 | | c0.16 | 0.01 | | 0.05 | |
| v/c Ratio | | 0.54 | 0.02 | | 0.26 | 0.00 | | 0.32 | 0.02 | | 0.10 | |
| Uniform Delay, d1 | | 16.8 | 13.7 | | 14.9 | 13.6 | | 10.0 | 8.4 | | 8.8 | |
| Progression Factor | | 1.94 | 3.17 | | 0.92 | 0.92 | | 0.32 | 0.32 | | 1.03 | |
| Incremental Delay, d2 | | 3.7 | 0.1 | | 1.1 | 0.0 | | 0.9 | 0.0 | | 0.2 | |
| Delay (s) | | 36.3 | 43.3 | | 14.8 | 12.6 | | 4.1 | 2.7 | | 9.3 | |
| Level of Service | | D | D | | B | B | | A | A | | A | |
| Approach Delay (s) | | 36.9 | | | 14.7 | | | 4.0 | | | 9.3 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.5 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 61.9% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 157 | 20 | 30 | 9 | 18 | 6 | 26 | 286 | 19 | 6 | 194 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1768 | 1390 | | 1813 | | | 1974 | | | 1873 | 1328 |
| Flt Permitted | | 0.80 | 1.00 | | 0.93 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1474 | 1390 | | 1713 | | | 1924 | | | 1858 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 174 | 22 | 33 | 10 | 20 | 7 | 29 | 318 | 21 | 7 | 216 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 19 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 0 | 53 |
| Lane Group Flow (vph) | 0 | 196 | 14 | 0 | 32 | 0 | 0 | 364 | 0 | 0 | 223 | 51 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 648 | 577 | | 448 | | | 947 | | | 915 | 654 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.09 | 0.01 | | 0.02 | | | c0.19 | | | 0.12 | 0.04 |
| v/c Ratio | | 0.30 | 0.02 | | 0.07 | | | 0.38 | | | 0.24 | 0.08 |
| Uniform Delay, d1 | | 12.7 | 11.2 | | 18.1 | | | 10.3 | | | 9.5 | 8.7 |
| Progression Factor | | 0.70 | 1.15 | | 1.00 | | | 0.55 | | | 0.49 | 0.34 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.3 | | | 1.1 | | | 0.6 | 0.2 |
| Delay (s) | | 9.9 | 13.0 | | 18.4 | | | 6.8 | | | 5.3 | 3.2 |
| Level of Service | | A | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 10.4 | | | 18.4 | | | 6.8 | | | 4.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.4 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 59.0% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|------|-------|-------|------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 787 | 220 | 254 | 1079 | 0 | 0 | 0 | 0 | 274 | 200 | 374 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4302 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.20 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4302 | | 327 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 828 | 232 | 267 | 1136 | 0 | 0 | 0 | 0 | 288 | 211 | 394 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 69 |
| Lane Group Flow (vph) | 0 | 1020 | 0 | 267 | 1136 | 0 | 0 | 0 | 0 | 233 | 382 | 140 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | pm+pt | | | | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 50.9 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Effective Green, g (s) | | 50.9 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Actuated g/C Ratio | | 0.48 | | 0.66 | 0.66 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2085 | | 383 | 2129 | | | | | 320 | 612 | 306 |
| v/s Ratio Prot | | 0.24 | | c0.09 | 0.35 | | | | | | | |
| v/s Ratio Perm | | | | c0.37 | | | | | | c0.16 | 0.14 | 0.10 |
| v/c Ratio | | 0.49 | | 0.70 | 0.53 | | | | | 0.73 | 0.62 | 0.46 |
| Uniform Delay, d1 | | 18.3 | | 9.5 | 9.4 | | | | | 37.7 | 36.6 | 35.1 |
| Progression Factor | | 1.00 | | 1.38 | 1.53 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.8 | | 3.6 | 0.6 | | | | | 8.3 | 2.1 | 1.3 |
| Delay (s) | | 19.1 | | 16.7 | 14.9 | | | | | 46.0 | 38.7 | 36.4 |
| Level of Service | | B | | B | B | | | | | D | D | D |
| Approach Delay (s) | | 19.1 | | | 15.3 | | | 0.0 | | | 40.1 | |
| Approach LOS | | B | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 96.2% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 309 | 752 | 0 | 0 | 811 | 234 | 521 | 346 | 366 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4421 | | | | |
| Flt Permitted | 0.20 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 617 | 3138 | | | 3119 | 1449 | | 4421 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 325 | 792 | 0 | 0 | 854 | 246 | 548 | 364 | 385 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 111 | 0 | 71 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 325 | 792 | 0 | 0 | 854 | 135 | 0 | 1226 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | Perm | | Perm | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.2 | 62.2 | | | 44.9 | 44.9 | | 30.8 | | | | |
| Effective Green, g (s) | 62.2 | 62.2 | | | 44.9 | 44.9 | | 30.8 | | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 613 | 1859 | | | 1334 | 620 | | 1297 | | | | |
| v/s Ratio Prot | c0.06 | 0.25 | | | c0.27 | | | | | | | |
| v/s Ratio Perm | 0.26 | | | | | 0.09 | | 0.28 | | | | |
| v/c Ratio | 0.53 | 0.43 | | | 0.64 | 0.22 | | 0.99dl | | | | |
| Uniform Delay, d1 | 12.6 | 11.7 | | | 23.7 | 19.0 | | 36.3 | | | | |
| Progression Factor | 0.74 | 0.87 | | | 0.93 | 1.37 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.6 | | | 1.6 | 0.5 | | 14.3 | | | | |
| Delay (s) | 10.3 | 10.8 | | | 23.7 | 26.5 | | 50.6 | | | | |
| Level of Service | B | B | | | C | C | | D | | | | |
| Approach Delay (s) | | 10.6 | | | 24.3 | | | 50.6 | | | 0.0 | |
| Approach LOS | | B | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 29.7 | | | HCM Level of Service | | | | C | | | | |
| HCM Volume to Capacity ratio | 0.74 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 105.0 | | | Sum of lost time (s) | | | | 18.0 | | | | |
| Intersection Capacity Utilization | 96.2% | | | ICU Level of Service | | | | F | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 103 | 439 | 221 | 76 | 736 | 40 | 226 | 178 | 40 | 37 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1601 | 3233 | | 1446 | 3008 | | 1544 | 2782 | |
| Flt Permitted | 0.15 | 1.00 | 1.00 | 0.49 | 1.00 | | 0.52 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 250 | 3061 | 1291 | 820 | 3233 | | 789 | 3008 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 108 | 462 | 233 | 80 | 775 | 42 | 238 | 187 | 42 | 39 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 97 | 0 | 4 | 0 | 0 | 20 | 0 | 0 | 79 | 0 |
| Lane Group Flow (vph) | 108 | 462 | 136 | 80 | 813 | 0 | 238 | 209 | 0 | 39 | 134 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 61.9 | 52.0 | 61.5 | 39.1 | 32.7 | | 31.1 | 22.6 | | 23.1 | 18.1 | |
| Effective Green, g (s) | 61.9 | 52.0 | 61.5 | 39.1 | 32.7 | | 31.1 | 22.6 | | 23.1 | 18.1 | |
| Actuated g/C Ratio | 0.59 | 0.50 | 0.59 | 0.37 | 0.31 | | 0.30 | 0.22 | | 0.22 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 469 | 1516 | 756 | 353 | 1007 | | 293 | 647 | | 244 | 480 | |
| v/s Ratio Prot | c0.06 | c0.15 | 0.02 | 0.01 | c0.25 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.08 | | 0.09 | 0.07 | | | c0.17 | | | 0.03 | | |
| v/c Ratio | 0.23 | 0.30 | 0.18 | 0.23 | 0.81 | | 0.81 | 0.32 | | 0.16 | 0.28 | |
| Uniform Delay, d1 | 11.9 | 15.8 | 10.1 | 21.8 | 33.3 | | 32.8 | 34.7 | | 32.8 | 37.8 | |
| Progression Factor | 0.92 | 1.00 | 2.24 | 1.00 | 1.00 | | 0.91 | 0.85 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.4 | 0.1 | 0.3 | 6.9 | | 15.1 | 1.0 | | 0.3 | 1.1 | |
| Delay (s) | 11.9 | 16.2 | 22.7 | 22.1 | 40.2 | | 45.1 | 30.7 | | 33.1 | 38.9 | |
| Level of Service | B | B | C | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 17.5 | | | 38.6 | | | 38.0 | | | 38.0 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 71.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 59 | 126 | 273 | 54 | 160 | 98 | 328 | 380 | 63 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1633 | 2808 | | 1463 | 3015 | | 1589 | 3257 | | 1549 | 3135 | |
| Flt Permitted | 0.57 | 1.00 | | 0.42 | 1.00 | | 0.46 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 986 | 2808 | | 653 | 3015 | | 772 | 3257 | | 790 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 133 | 287 | 57 | 168 | 103 | 345 | 400 | 66 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 208 | 0 | 0 | 75 | 0 | 0 | 13 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 62 | 212 | 0 | 57 | 196 | 0 | 345 | 453 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.8 | 28.8 | | 35.8 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.8 | 28.8 | | 35.8 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 379 | 770 | | 277 | 827 | | 530 | 1300 | | 343 | 935 | |
| v/s Ratio Prot | 0.01 | c0.08 | | c0.01 | 0.07 | | c0.11 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.04 | | | 0.06 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.16 | 0.27 | | 0.21 | 0.24 | | 0.65 | 0.35 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.7 | 29.9 | | 23.8 | 29.6 | | 16.6 | 22.0 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.87 | |
| Incremental Delay, d2 | 0.2 | 0.9 | | 0.4 | 0.7 | | 3.0 | 0.7 | | 0.5 | 0.9 | |
| Delay (s) | 23.9 | 30.8 | | 24.3 | 30.3 | | 19.6 | 22.8 | | 22.8 | 26.0 | |
| Level of Service | C | C | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 29.9 | | | 29.2 | | | 21.4 | | | 25.3 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 25.5 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.48 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | 66.0% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 165 | 392 | 79 | 6 | 401 | 108 | 65 | 577 | 7 | 80 | 309 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2890 | | | 2887 | | 1436 | 3185 | | 1450 | 2788 | |
| Flt Permitted | | 0.58 | | | 0.95 | | 0.43 | 1.00 | | 0.29 | 1.00 | |
| Satd. Flow (perm) | | 1703 | | | 2733 | | 654 | 3185 | | 448 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 183 | 436 | 88 | 7 | 446 | 120 | 72 | 641 | 8 | 89 | 343 | 111 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 690 | 0 | 0 | 536 | 0 | 72 | 648 | 0 | 89 | 406 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 780 | | | 799 | | 310 | 1078 | | 241 | 944 | |
| v/s Ratio Prot | | c0.05 | | | | | 0.01 | c0.20 | | c0.02 | 0.15 | |
| v/s Ratio Perm | | c0.31 | | | 0.20 | | 0.08 | | | 0.13 | | |
| v/c Ratio | | 0.88 | | | 0.67 | | 0.23 | 0.60 | | 0.37 | 0.43 | |
| Uniform Delay, d1 | | 17.6 | | | 20.2 | | 12.4 | 17.9 | | 12.8 | 16.6 | |
| Progression Factor | | 1.00 | | | 1.58 | | 0.88 | 0.69 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 14.0 | | | 2.3 | | 1.6 | 2.3 | | 4.3 | 1.4 | |
| Delay (s) | | 31.5 | | | 34.4 | | 12.5 | 14.6 | | 17.1 | 18.1 | |
| Level of Service | | C | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 31.5 | | | 34.4 | | | 14.4 | | | 17.9 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 70.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 49 | 111 | 46 | 68 | 127 | 13 | 36 | 632 | 77 | 10 | 359 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1665 | 1856 | | 1612 | 1938 | | 1658 | 3213 | | 1138 | 3197 | |
| Flt Permitted | 0.67 | 1.00 | | 0.66 | 1.00 | | 0.51 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 1166 | 1856 | | 1111 | 1938 | | 889 | 3213 | | 386 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 51 | 114 | 47 | 70 | 131 | 13 | 37 | 652 | 79 | 10 | 370 | 44 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 6 | 0 | 0 | 14 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 51 | 138 | 0 | 70 | 138 | 0 | 37 | 717 | 0 | 10 | 400 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 431 | 685 | | 410 | 716 | | 424 | 1532 | | 184 | 1525 | |
| v/s Ratio Prot | c0.07 | | | 0.07 | | | c0.22 | | | 0.13 | | |
| v/s Ratio Perm | 0.04 | | | 0.06 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.12 | 0.20 | | 0.17 | 0.19 | | 0.09 | 0.47 | | 0.05 | 0.26 | |
| Uniform Delay, d1 | 13.5 | 14.0 | | 13.8 | 13.9 | | 9.3 | 11.4 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.73 | 1.80 | | 1.00 | 1.00 | | 0.50 | 0.51 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.4 | | 0.4 | 1.0 | | 0.5 | 0.4 | |
| Delay (s) | 14.1 | 14.6 | | 24.5 | 25.4 | | 9.7 | 12.5 | | 5.1 | 5.6 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 14.5 | | | 25.1 | | | 12.3 | | | 5.5 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 58.4% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|-------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 422 | 160 | 556 | 14 | 3 | 14 | 3 | 46 | 10 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | | 2958 | | | | 1732 | | | 1864 | | |
| Flt Permitted | 1.00 | | 0.67 | | | | 0.94 | | | 0.87 | | |
| Satd. Flow (perm) | 2956 | | 2007 | | | | 1650 | | | 1672 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 444 | 168 | 585 | 15 | 3 | 15 | 3 | 48 | 11 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 444 | 0 | 766 | 0 | 0 | 0 | 31 | 0 | 0 | 14 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | | Perm | Perm | | | Perm | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 921 | | | | 355 | | | 360 | | |
| v/s Ratio Prot | 0.15 | | c0.08 | | | | | | | | | |
| v/s Ratio Perm | | | c0.27 | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.54 | | 0.83 | | | | 0.09 | | | 0.04 | | |
| Uniform Delay, d1 | 20.0 | | 17.0 | | | | 20.4 | | | 20.2 | | |
| Progression Factor | 1.33 | | 0.76 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 1.5 | | 8.3 | | | | 0.5 | | | 0.2 | | |
| Delay (s) | 28.1 | | 21.2 | | | | 20.9 | | | 20.4 | | |
| Level of Service | C | | C | | | | C | | | C | | |
| Approach Delay (s) | 28.1 | | 21.2 | | | | 20.9 | | | 20.4 | | |
| Approach LOS | C | | C | | | | C | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 34.2 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 78.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1430 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1430 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 224 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 225 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.16 | |
| v/s Ratio Perm | | |
| v/c Ratio | 1.02 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 1.08 | |
| Incremental Delay, d2 | 65.9 | |
| Delay (s) | 95.6 | |
| Level of Service | F | |
| Approach Delay (s) | 95.6 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|-------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 186 | 556 | 575 | 64 | 41 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3217 | 3208 | | 1629 | 1457 |
| Flt Permitted | | 0.64 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2071 | 3208 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 207 | 618 | 639 | 71 | 46 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 825 | 697 | 0 | 46 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1274 | 1974 | | 426 | 381 |
| v/s Ratio Prot | | | 0.22 | | 0.03 | |
| v/s Ratio Perm | | c0.40 | | | | c0.03 |
| v/c Ratio | | 0.65 | 0.35 | | 0.11 | 0.12 |
| Uniform Delay, d1 | | 8.0 | 6.1 | | 18.2 | 18.3 |
| Progression Factor | | 1.40 | 1.25 | | 0.93 | 0.86 |
| Incremental Delay, d2 | | 2.1 | 0.5 | | 0.5 | 0.6 |
| Delay (s) | | 13.3 | 8.2 | | 17.5 | 16.3 |
| Level of Service | | B | A | | B | B |
| Approach Delay (s) | | 13.3 | 8.2 | | 16.6 | |
| Approach LOS | | B | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 11.6 | | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | 0.49 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 54.2% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 51 | 525 | 580 | 190 | 131 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2927 | 2906 | | 1464 | 1373 |
| Flt Permitted | | 0.84 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2467 | 2906 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 54 | 553 | 611 | 200 | 138 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 607 | 762 | 0 | 138 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1442 | 1699 | | 428 | 401 |
| v/s Ratio Prot | | | c0.26 | | c0.09 | |
| v/s Ratio Perm | | 0.25 | | | | 0.01 |
| v/c Ratio | | 0.42 | 0.45 | | 0.32 | 0.04 |
| Uniform Delay, d1 | | 7.4 | 7.6 | | 18.0 | 16.5 |
| Progression Factor | | 0.49 | 0.53 | | 0.94 | 1.18 |
| Incremental Delay, d2 | | 0.7 | 0.7 | | 2.0 | 0.2 |
| Delay (s) | | 4.4 | 4.7 | | 18.9 | 19.6 |
| Level of Service | | A | A | | B | B |
| Approach Delay (s) | | 4.4 | 4.7 | | 19.1 | |
| Approach LOS | | A | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 6.3 | | HCM Level of Service | A |
| HCM Volume to Capacity ratio | | | 0.41 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 57.9% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 505 | 153 | 104 | 534 | 401 | 79 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.98 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2214 | | 1769 | 2436 | 1816 | |
| Flt Permitted | 1.00 | | 0.16 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2214 | | 297 | 2436 | 1816 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 561 | 170 | 116 | 593 | 446 | 88 |
| RTOR Reduction (vph) | 17 | 0 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 714 | 0 | 116 | 593 | 523 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1056 | | 142 | 1162 | 671 | |
| v/s Ratio Prot | 0.32 | | | 0.24 | c0.29 | |
| v/s Ratio Perm | | | c0.39 | | | |
| v/c Ratio | 0.68 | | 0.82 | 0.51 | 0.78 | |
| Uniform Delay, d1 | 13.1 | | 14.6 | 11.8 | 18.2 | |
| Progression Factor | 1.23 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.3 | | 38.5 | 1.6 | 8.7 | |
| Delay (s) | 19.4 | | 53.1 | 13.4 | 26.9 | |
| Level of Service | B | | D | B | C | |
| Approach Delay (s) | 19.4 | | | 19.9 | 26.9 | |
| Approach LOS | B | | | B | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 21.6 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.80 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 77.0% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 560 | 85 | 251 | 612 | 9 | 68 | 0 | 177 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.39 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.71 | |
| Satd. Flow (perm) | 778 | 3213 | 1422 | 614 | 3138 | 1366 | | 1309 | 1443 | | 722 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 622 | 94 | 279 | 680 | 10 | 76 | 0 | 197 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 2 | 0 | 0 | 173 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 622 | 57 | 279 | 680 | 8 | 0 | 76 | 24 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 51.5 | 51.5 | 51.5 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Effective Green, g (s) | 51.5 | 51.5 | 51.5 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Actuated g/C Ratio | 0.61 | 0.61 | 0.61 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 471 | 1947 | 862 | 620 | 2459 | 1070 | | 160 | 177 | | 88 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.22 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | c0.29 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.32 | 0.07 | 0.45 | 0.28 | 0.01 | | 0.47 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 6.6 | 8.2 | 6.9 | 2.8 | 2.5 | 2.0 | | 34.8 | 33.3 | | 32.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.4 | 0.1 | 0.5 | 0.1 | 0.0 | | 2.2 | 0.4 | | 0.1 | |
| Delay (s) | 6.6 | 8.6 | 7.0 | 3.3 | 2.6 | 2.0 | | 37.0 | 33.6 | | 32.8 | |
| Level of Service | A | A | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 8.4 | | | 2.8 | | | 34.6 | | | 32.8 | |
| Approach LOS | | A | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.3 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 46.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 12 | 774 | 795 | 43 | 23 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3016 | | 1486 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2843 | 3016 | | 1486 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 860 | 883 | 48 | 26 | 10 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 873 | 927 | 0 | 27 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1042 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.31 | | c0.02 | |
| v/s Ratio Perm | | c0.31 | | | | |
| v/c Ratio | | 0.84 | 0.43 | | 0.23 | |
| Uniform Delay, d1 | | 26.1 | 5.4 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 8.0 | 0.3 | | 4.6 | |
| Delay (s) | | 34.1 | 0.3 | | 43.6 | |
| Level of Service | | C | A | | D | |
| Approach Delay (s) | | 34.1 | 0.3 | | 43.6 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 17.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.62 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 42.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 74 | 418 | 1 | 16 | 536 | 78 | 0 | 0 | 1 | 43 | 3 | 74 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (prot) | | 1729 | | | 3229 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.81 | | | 0.95 | | | 1.00 | | | 0.94 | 1.00 |
| Satd. Flow (perm) | | 1411 | | | 3063 | | | 1432 | | | 1581 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 82 | 464 | 1 | 18 | 596 | 87 | 0 | 0 | 1 | 48 | 3 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 55 |
| Lane Group Flow (vph) | 0 | 547 | 0 | 0 | 688 | 0 | 0 | 0 | 0 | 0 | 51 | 27 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 515 | | | 1649 | | | 152 | | | 470 | 422 |
| v/s Ratio Prot | | | | | c0.07 | | | 0.00 | | | c0.02 | |
| v/s Ratio Perm | | c0.39 | | | 0.15 | | | | | | c0.01 | 0.02 |
| v/c Ratio | | 1.06 | | | 0.42 | | | 0.00 | | | 0.11 | 0.06 |
| Uniform Delay, d1 | | 27.0 | | | 12.1 | | | 34.0 | | | 21.9 | 19.5 |
| Progression Factor | | 1.00 | | | 1.67 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 57.2 | | | 0.1 | | | 0.0 | | | 0.5 | 0.3 |
| Delay (s) | | 84.2 | | | 20.2 | | | 34.0 | | | 22.3 | 19.8 |
| Level of Service | | F | | | C | | | C | | | C | B |
| Approach Delay (s) | | 84.2 | | | 20.2 | | | 34.0 | | | 20.8 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 70.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 27 | 35 | 997 | 57 | 34 | 17 | 48 | 23 | 22 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.93 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1555 | 3022 | | 1587 | 3022 | | | 1787 | | | 1700 | |
| Flt Permitted | 0.18 | 1.00 | | 0.37 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 292 | 3022 | | 610 | 3022 | | | 1613 | | | 1628 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 41 | 623 | 28 | 36 | 1039 | 59 | 35 | 18 | 50 | 24 | 23 | 91 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 32 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 41 | 646 | 0 | 36 | 1092 | 0 | 0 | 71 | 0 | 0 | 115 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 153 | 1581 | | 319 | 1581 | | | 571 | | | 576 | |
| v/s Ratio Prot | | 0.21 | | | c0.36 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | | 0.04 | | | c0.07 | |
| v/c Ratio | 0.27 | 0.41 | | 0.11 | 0.69 | | | 0.12 | | | 0.20 | |
| Uniform Delay, d1 | 8.6 | 9.4 | | 7.9 | 11.6 | | | 14.2 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.37 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.3 | 0.8 | | 0.6 | 2.2 | | | 0.4 | | | 0.8 | |
| Delay (s) | 12.8 | 10.2 | | 6.1 | 18.1 | | | 14.6 | | | 15.4 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.3 | | | 17.7 | | | 14.6 | | | 15.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 787 | 5 | 31 | 619 | 40 | 0 | 0 | 0 | 578 | 88 | 375 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.92 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 790 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 336 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 828 | 5 | 33 | 652 | 42 | 0 | 0 | 0 | 608 | 93 | 395 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 168 |
| Lane Group Flow (vph) | 26 | 833 | 0 | 33 | 652 | 24 | 0 | 0 | 0 | 608 | 93 | 227 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 160 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.20 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.15 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.36 | 0.08 | | | | 0.80 | 0.23 | 0.66 |
| Uniform Delay, d1 | 31.6 | 38.6 | | 15.2 | 15.7 | 13.1 | | | | 47.2 | 40.6 | 45.4 |
| Progression Factor | 0.84 | 0.86 | | 0.34 | 0.75 | 1.27 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 8.8 | 1.4 | 9.8 |
| Delay (s) | 28.6 | 37.4 | | 5.2 | 12.2 | 17.0 | | | | 56.0 | 42.0 | 55.2 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.2 | | | 12.1 | | | 0.0 | | | 54.5 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013


| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 338 | 809 | 218 | 53 | 560 | 280 | 100 | 247 | 54 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 356 | 852 | 229 | 56 | 589 | 295 | 105 | 260 | 57 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 222 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 356 | 1063 | 0 | 56 | 589 | 73 | 0 | 365 | 15 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1707 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.62 | | 0.53 | 0.76 | 0.29 | | 0.51 | 0.05 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 21.9 | | 59.2 | 45.5 | 39.8 | | 45.0 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.94 | 0.17 | | 1.00 | 1.00 | 1.00 | | 0.94 | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.0 | 7.0 | 2.9 | | 2.6 | 0.3 | 49.7 | | 0.4 |
| Delay (s) | 30.5 | 4.7 | | 77.2 | 52.5 | 42.7 | | 45.1 | 40.7 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 50.9 | | | 44.5 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|--------|------|--------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | | ↑ | ↑ | ↑ | |
| Volume (vph) | 0 | 885 | 165 | 101 | 813 | 0 | 74 | 0 | 79 | 9 | 14 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1648 | 3149 | | 1387 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.20 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 341 | 3149 | | 1085 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 922 | 172 | 105 | 847 | 0 | 77 | 0 | 82 | 9 | 15 | 7 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1079 | 0 | 105 | 847 | 0 | 77 | 0 | 26 | 9 | 17 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 205 | 1889 | | 347 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | c0.36 | | | 0.27 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.31 | | | c0.07 | | 0.02 | | 0.00 | |
| v/c Ratio | | 0.60 | | 0.51 | 0.45 | | 0.22 | | 0.06 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 12.5 | | 11.5 | 10.9 | | 24.9 | | 23.5 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 8.9 | 0.8 | | 1.5 | | 0.2 | | 0.0 | 0.1 |
| Delay (s) | | 14.0 | | 20.4 | 11.7 | | 26.4 | | 23.8 | | 23.3 | 23.4 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.0 | | | 12.7 | | | 25.0 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 60.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|-------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 290 | 0 | 1188 | 208 | 658 | 0 | 0 | 787 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 0 | 0 | 0 | 299 | 0 | 1225 | 214 | 678 | 0 | 0 | 811 | 505 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 299 | 0 | 1225 | 214 | 678 | 0 | 0 | 1316 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1260 | |
| v/s Ratio Prot | | | | 0.19 | | c0.80 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.66 | | 2.80 | 0.46 | 0.25 | | | 1.17dr | |
| Uniform Delay, d1 | | | | 32.4 | | 37.5 | 29.5 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.63 | 2.06 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.2 | | 817.8 | 2.7 | 0.2 | | | 37.8 | |
| Delay (s) | | | | 39.6 | | 855.3 | 21.3 | 17.8 | | | 74.8 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 695.3 | | | 18.7 | | | 74.8 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 314.7 | | | HCM Level of Service | | | | | F | |
| HCM Volume to Capacity ratio | | | 1.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 98.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 324 | 770 | 144 | 0 | 0 | 0 | 0 | 542 | 401 | 355 | 721 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 341 | 811 | 152 | 0 | 0 | 0 | 0 | 571 | 422 | 374 | 759 | 0 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 307 | 984 | 0 | 0 | 0 | 0 | 0 | 571 | 422 | 374 | 759 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.13 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.31 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.63 | 0.96 | | | | | | 0.49 | 0.71 | 0.79 | 0.27 | |
| Uniform Delay, d1 | 30.1 | 34.9 | | | | | | 32.5 | 34.8 | 34.0 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 6.0 | 20.5 | | | | | | 1.3 | 6.3 | 5.2 | 0.1 | |
| Delay (s) | 36.1 | 55.4 | | | | | | 38.3 | 45.8 | 34.6 | 2.4 | |
| Level of Service | D | E | | | | | | D | D | C | A | |
| Approach Delay (s) | | 50.9 | | | 0.0 | | | 41.5 | | | 13.0 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.6 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 98.8% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 286 | 25 | 24 | 11 | 137 | 0 | 0 | 142 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3133 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.56 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3133 | | 1003 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 301 | 26 | 25 | 12 | 144 | 0 | 0 | 149 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 301 | 34 | 0 | 12 | 144 | 0 | 0 | 153 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 648 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.08 | | | c0.08 | |
| v/s Ratio Perm | | | | c0.18 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.56 | 0.03 | | 0.02 | 0.13 | | | 0.14 | |
| Uniform Delay, d1 | | | | 24.1 | 20.0 | | 10.3 | 7.8 | | | 9.7 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.06 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.2 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 28.3 | 20.1 | | 11.0 | 9.5 | | | 10.0 | |
| Level of Service | | | | C | C | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 27.1 | | | 9.6 | | | 10.0 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 1.0 | | | |
| Intersection Capacity Utilization | | | 36.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 3 | 0 | 14 | 0 | 122 | 31 | 46 | 383 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.89 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1729 | | | 1550 | | | 1726 | | 1590 | 1860 | |
| Flt Permitted | 0.75 | 1.00 | | | 0.98 | | | 1.00 | | 0.62 | 1.00 | |
| Satd. Flow (perm) | 1517 | 1729 | | | 1533 | | | 1726 | | 1044 | 1860 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 12 | 26 | 3 | 0 | 16 | 0 | 136 | 34 | 51 | 426 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 8 | 0 | 0 | 159 | 0 | 51 | 426 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 549 | | | 487 | | | 812 | | 659 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.09 | | 0.01 | c0.23 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.20 | | 0.08 | 0.39 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.1 | | 8.3 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.96 | 0.85 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.5 | | 0.2 | 1.0 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 13.7 | | 8.2 | 8.9 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 13.7 | | | 8.8 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 41.3% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 46 | 39 | 10 | 183 | 273 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1754 | | 1765 | 1782 | 1656 | |
| Flt Permitted | 0.97 | | 0.52 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1754 | | 966 | 1782 | 1656 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 43 | 11 | 203 | 303 | 30 |
| RTOR Reduction (vph) | 29 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 65 | 0 | 11 | 203 | 328 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 567 | | 535 | 987 | 917 | |
| v/s Ratio Prot | c0.04 | | | 0.11 | c0.20 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.11 | | 0.02 | 0.21 | 0.36 | |
| Uniform Delay, d1 | 15.5 | | 6.5 | 7.3 | 8.1 | |
| Progression Factor | 1.00 | | 0.46 | 0.60 | 1.44 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 0.9 | |
| Delay (s) | 15.9 | | 3.1 | 4.8 | 12.6 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.7 | 12.6 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.4 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.27 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 28.8% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 30 | 265 | 9 | 257 | 122 | 0 | 0 | 275 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.50 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 887 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 32 | 279 | 9 | 271 | 128 | 0 | 0 | 289 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 318 | 0 | 271 | 128 | 0 | 0 | 289 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 627 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.08 | | c0.05 | 0.08 | | | 0.17 | |
| v/s Ratio Perm | | | | | | | c0.21 | | | | | 0.01 |
| v/c Ratio | | | | | 0.28 | | 0.43 | 0.13 | | | 0.37 | 0.01 |
| Uniform Delay, d1 | | | | | 22.4 | | 12.7 | 7.4 | | | 15.6 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.2 | 0.3 | | | 1.4 | 0.0 |
| Delay (s) | | | | | 23.0 | | 14.9 | 7.6 | | | 17.0 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.0 | | | 12.6 | | | 16.7 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.0 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 53.6% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 203 | 30 | 59 | 702 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3286 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 447 | 3286 | | 1063 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 106 | 104 | 42 | 148 | 226 | 33 | 66 | 780 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 242 | 0 | 148 | 244 | 0 | 66 | 823 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1490 | | 641 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.07 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.16 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.80 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 9.9 | | 8.5 | 15.9 | |
| Level of Service | | | | | C | | B | A | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.5 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |




















No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  |  |
| Volume (vph) | 32 | 49 | 12 | 8 | 63 | 63 | 5 | 271 | 20 | 159 | 588 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1967 | | | 1654 | | 1595 | 3178 | | 1704 | 3231 | |
| Flt Permitted | | 0.88 | | | 0.99 | | 0.34 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1765 | | | 1638 | | 571 | 3178 | | 998 | 3231 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 54 | 13 | 9 | 70 | 70 | 6 | 301 | 22 | 177 | 653 | 56 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 43 | 0 | 0 | 7 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 96 | 0 | 0 | 106 | 0 | 6 | 316 | 0 | 177 | 701 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 588 | | | 546 | | 320 | 1780 | | 559 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.22 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.18 | | |
| v/c Ratio | | 0.16 | | | 0.19 | | 0.02 | 0.18 | | 0.32 | 0.39 | |
| Uniform Delay, d1 | | 17.6 | | | 17.8 | | 7.3 | 8.1 | | 8.8 | 9.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.8 | | 0.1 | 0.2 | | 1.3 | 0.5 | |
| Delay (s) | | 18.2 | | | 18.6 | | 7.4 | 8.3 | | 3.7 | 2.9 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.2 | | | 18.6 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.9 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 49.2% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 35 | 182 | 64 | 236 | 557 | 77 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 37 | 192 | 67 | 248 | 586 | 81 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 228 | 150 | 166 | 391 | 276 | |
| Volume Left (vph) | 37 | 67 | 0 | 0 | 0 | |
| Volume Right (vph) | 192 | 0 | 0 | 0 | 81 | |
| Hadj (s) | -0.42 | 0.28 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.5 | 6.3 | 6.1 | 5.7 | 5.5 | |
| Degree Utilization, x | 0.35 | 0.26 | 0.28 | 0.62 | 0.42 | |
| Capacity (veh/h) | 607 | 548 | 568 | 620 | 642 | |
| Control Delay (s) | 11.5 | 10.3 | 10.2 | 16.2 | 11.2 | |
| Approach Delay (s) | 11.5 | 10.3 | | 14.1 | | |
| Approach LOS | B | B | | B | | |
| Intersection Summary | | | | | | |
| Delay | | | 12.6 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 51.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 371 | 18 | 18 | 381 | 65 | 73 | 55 | 68 | 351 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frbp, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3252 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 937 | 1731 | 1421 | | | 257 | 3252 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 412 | 20 | 20 | 423 | 72 | 81 | 61 | 76 | 390 | 34 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 39 | 0 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 412 | 8 | 20 | 423 | 114 | 0 | 0 | 137 | 418 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 223 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.24 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.08 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.57 | 0.01 | 0.09 | 1.03 | 0.34 | | | 1.99 | 0.48 | |
| Uniform Delay, d1 | | 21.5 | 23.3 | 17.8 | 31.1 | 40.0 | 33.1 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.2 | 0.0 | 0.8 | 51.3 | 2.7 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.4 | 26.5 | 17.9 | 31.9 | 91.3 | 35.8 | | | 529.5 | 34.3 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.7 | | | 75.1 | | | | | 155.2 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 137.4 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 100.9% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 103 | 559 | 80 | 101 | 4 | 108 | 587 | 190 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 678 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 114 | 621 | 89 | 112 | 4 | 120 | 652 | 211 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 114 | 810 | 0 | 0 | 0 | 124 | 837 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 178 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.07 | | |
| v/s Ratio Perm | 0.17 | | | | | | c0.32 | |
| v/c Ratio | 0.64 | 0.95 | | | | 0.37 | 1.63 | |
| Uniform Delay, d1 | 34.4 | 38.1 | | | | 36.7 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 16.4 | 21.4 | | | | 3.1 | 291.8 | |
| Delay (s) | 50.7 | 59.5 | | | | 39.8 | 334.0 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 58.4 | | | | 297.1 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 64 | 577 | 0 | 0 | 440 | 49 | 83 | 51 | 17 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1954 | | | 1843 | | | | |
| Flt Permitted | | 0.92 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1547 | | | 1954 | | | 1843 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 67 | 607 | 0 | 0 | 463 | 52 | 87 | 54 | 18 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 674 | 0 | 0 | 515 | 0 | 0 | 159 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 952 | | | 1202 | | | 482 | | | | |
| v/s Ratio Prot | | | | | 0.26 | | | | | | | |
| v/s Ratio Perm | | 0.44 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.71 | | | 0.43 | | | 0.33 | | | | |
| Uniform Delay, d1 | | 8.5 | | | 6.5 | | | 19.4 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.4 | | | 1.1 | | | 1.8 | | | | |
| Delay (s) | | 13.0 | | | 7.6 | | | 21.2 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 13.0 | | | 7.6 | | | 21.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 82.1% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|------|-------|------|----------------------|------|------|-------|-------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | ↗ | ↗ | ↘ | ↗ | ↗ | ↘ |
| Volume (vph) | 69 | 319 | 149 | 114 | 299 | 122 | 103 | 625 | 82 | 136 | 751 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1981 | 1434 | | 1945 | 1444 | 1546 | 3040 | 1296 | 1505 | 3069 | 1252 |
| Flt Permitted | | 0.46 | 1.00 | | 0.75 | 1.00 | 0.23 | 1.00 | 1.00 | 0.30 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 918 | 1434 | | 1485 | 1444 | 379 | 3040 | 1296 | 468 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 73 | 336 | 157 | 120 | 315 | 128 | 108 | 658 | 86 | 143 | 791 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 93 | 0 | 0 | 91 | 0 | 0 | 51 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 409 | 64 | 0 | 435 | 37 | 108 | 658 | 35 | 143 | 791 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 477 | 587 | | 424 | 413 | 275 | 1225 | 522 | 315 | 1248 | 509 |
| v/s Ratio Prot | | c0.08 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.27 | 0.04 | | c0.29 | 0.03 | 0.16 | | 0.03 | 0.18 | | 0.04 |
| v/c Ratio | | 0.86 | 0.11 | | 1.03 | 0.09 | 0.39 | 0.54 | 0.07 | 0.45 | 0.63 | 0.10 |
| Uniform Delay, d1 | | 28.2 | 19.2 | | 37.5 | 27.5 | 16.4 | 23.9 | 19.2 | 15.9 | 24.9 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.75 | 1.55 | 2.68 |
| Incremental Delay, d2 | | 17.8 | 0.4 | | 50.5 | 0.4 | 0.9 | 1.7 | 0.2 | 1.0 | 2.4 | 0.4 |
| Delay (s) | | 46.0 | 19.5 | | 88.0 | 27.9 | 17.3 | 25.6 | 19.5 | 28.9 | 41.1 | 52.0 |
| Level of Service | | D | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 38.6 | | | 74.3 | | | 23.9 | | | 40.4 | |
| Approach LOS | | D | | | E | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.7 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 86.3% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 83 | 387 | 83 | 90 | 427 | 90 | 49 | 59 | 67 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1643 | | | 1643 | | | 1797 | | | | |
| Flt Permitted | | 0.85 | | | 0.85 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1401 | | | 1415 | | | 1797 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 87 | 407 | 87 | 95 | 449 | 95 | 52 | 62 | 71 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 571 | 0 | 0 | 629 | 0 | 0 | 150 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 862 | | | 871 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.41 | | | 0.44 | | | 0.08 | | | | |
| v/c Ratio | | 0.66 | | | 0.72 | | | 0.32 | | | | |
| Uniform Delay, d1 | | 8.1 | | | 8.7 | | | 19.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.0 | | | 5.2 | | | 1.8 | | | | |
| Delay (s) | | 12.1 | | | 13.8 | | | 21.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 12.1 | | | 13.8 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 21 | 426 | 71 | 74 | 495 | 36 | 37 | 76 | 72 | 53 | 235 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1686 | 1455 | | 1886 | |
| Flt Permitted | | 0.97 | 1.00 | | 0.89 | 1.00 | | 0.84 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1634 | 1382 | | 1537 | 1417 | | 1436 | 1455 | | 1780 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 448 | 75 | 78 | 521 | 38 | 39 | 80 | 76 | 56 | 247 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 32 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 470 | 43 | 0 | 599 | 26 | 0 | 119 | 24 | 0 | 345 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 937 | 792 | | 881 | 812 | | 460 | 466 | | 570 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.29 | 0.03 | | 0.39 | 0.02 | | 0.08 | 0.02 | | 0.19 | |
| v/c Ratio | | 0.50 | 0.05 | | 0.68 | 0.03 | | 0.26 | 0.05 | | 0.60 | |
| Uniform Delay, d1 | | 9.6 | 7.0 | | 11.2 | 7.0 | | 18.9 | 17.6 | | 21.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 0.1 | | 4.2 | 0.1 | | 1.4 | 0.2 | | 4.7 | |
| Delay (s) | | 11.5 | 7.2 | | 15.4 | 7.0 | | 20.3 | 17.8 | | 26.2 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 10.9 | | | 14.9 | | | 19.3 | | | 26.2 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 93.0% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 57 | 439 | 30 | 44 | 509 | 52 | 44 | 165 | 55 | 117 | 199 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1530 | 3066 | | 1651 | 3729 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.39 | 1.00 | | 0.44 | 1.00 | | 0.60 | 1.00 | 1.00 | 0.64 | 1.00 | 1.00 |
| Satd. Flow (perm) | 621 | 3066 | | 773 | 3729 | | 1001 | 1663 | 1370 | 1061 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 462 | 32 | 46 | 536 | 55 | 46 | 174 | 58 | 123 | 209 | 32 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 35 | 0 | 0 | 19 |
| Lane Group Flow (vph) | 60 | 486 | 0 | 46 | 579 | 0 | 46 | 174 | 23 | 123 | 209 | 13 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 296 | 1462 | | 369 | 1778 | | 400 | 665 | 548 | 424 | 672 | 559 |
| v/s Ratio Prot | | c0.16 | | | 0.16 | | | 0.10 | | | c0.12 | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | 0.05 | | 0.02 | 0.12 | | 0.01 |
| v/c Ratio | 0.20 | 0.33 | | 0.12 | 0.33 | | 0.12 | 0.26 | 0.04 | 0.29 | 0.31 | 0.02 |
| Uniform Delay, d1 | 9.8 | 10.6 | | 9.5 | 10.5 | | 12.3 | 13.1 | 11.9 | 13.2 | 13.4 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.87 | 0.92 | 0.81 | 0.56 | 0.56 | 0.25 |
| Incremental Delay, d2 | 1.5 | 0.6 | | 0.7 | 0.5 | | 0.6 | 1.0 | 0.1 | 1.7 | 1.2 | 0.1 |
| Delay (s) | 11.4 | 11.2 | | 10.1 | 11.0 | | 11.2 | 13.0 | 9.8 | 9.1 | 8.7 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.2 | | | 11.0 | | | 12.1 | | | 8.3 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 53.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 389 | 71 | 70 | 369 | 64 | 55 | 179 | 64 | 87 | 240 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.95 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1325 | 3143 | | 1513 | 3126 | | 1579 | 2918 | | 1451 | 3002 | |
| Flt Permitted | 0.47 | 1.00 | | 0.45 | 1.00 | | 0.54 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 654 | 3143 | | 717 | 3126 | | 906 | 2918 | | 911 | 3002 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 52 | 401 | 73 | 72 | 380 | 66 | 57 | 185 | 66 | 90 | 247 | 77 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 52 | 474 | 0 | 72 | 446 | 0 | 57 | 212 | 0 | 90 | 285 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 314 | 1509 | | 344 | 1500 | | 374 | 1206 | | 377 | 1241 | |
| v/s Ratio Prot | c0.15 | | | 0.14 | | | 0.07 | | | 0.09 | | |
| v/s Ratio Perm | 0.08 | | | 0.10 | | | 0.06 | | | c0.10 | | |
| v/c Ratio | 0.17 | 0.31 | | 0.21 | 0.30 | | 0.15 | 0.18 | | 0.24 | 0.23 | |
| Uniform Delay, d1 | 11.0 | 11.9 | | 11.3 | 11.8 | | 13.8 | 13.9 | | 14.3 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.4 | 0.5 | | 0.9 | 0.3 | | 1.5 | 0.4 | |
| Delay (s) | 12.1 | 12.5 | | 12.7 | 12.3 | | 14.6 | 14.2 | | 15.8 | 14.7 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.5 | | | 12.4 | | | 14.3 | | | 14.9 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.5% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 86 | 420 | 57 | 31 | 500 | 46 | 81 | 194 | 57 | 76 | 473 | 106 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1594 | 1654 | | 1367 | 1974 | | 1534 | 2998 | | 1534 | 3016 | |
| Flt Permitted | 0.27 | 1.00 | | 0.33 | 1.00 | | 0.28 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 446 | 1654 | | 482 | 1974 | | 457 | 2998 | | 951 | 3016 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 91 | 442 | 60 | 33 | 526 | 48 | 85 | 204 | 60 | 80 | 498 | 112 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 91 | 502 | 0 | 33 | 574 | 0 | 85 | 264 | 0 | 80 | 610 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 44.0 | 39.4 | | 40.8 | 37.8 | | 26.6 | 21.8 | | 26.6 | 21.8 | |
| Effective Green, g (s) | 44.0 | 37.4 | | 40.8 | 35.8 | | 26.6 | 19.8 | | 26.6 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 293 | 728 | | 263 | 831 | | 204 | 698 | | 331 | 703 | |
| v/s Ratio Prot | c0.02 | c0.30 | | 0.00 | 0.29 | | c0.02 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.31 | 0.69 | | 0.13 | 0.69 | | 0.42 | 0.38 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 21.8 | 19.1 | | 19.1 | 20.1 | | 28.9 | 27.4 | | 21.9 | 31.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.6 | 5.3 | | 0.2 | 4.7 | | 1.4 | 1.6 | | 0.4 | 13.7 | |
| Delay (s) | 22.4 | 24.4 | | 19.3 | 24.8 | | 30.3 | 29.0 | | 22.3 | 45.0 | |
| Level of Service | C | C | | B | C | | C | C | | C | D | |
| Approach Delay (s) | | 24.1 | | | 24.5 | | | 29.3 | | | 42.4 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 76.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 71 | 375 | 61 | 111 | 482 | 112 | 63 | 150 | 55 | 121 | 348 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3130 | | 1652 | 3236 | | 1549 | 3027 | |
| Flt Permitted | | 0.76 | | | 0.76 | | 0.46 | 1.00 | | 0.62 | 1.00 | |
| Satd. Flow (perm) | | 2811 | | | 2400 | | 798 | 3236 | | 1005 | 3027 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 395 | 64 | 117 | 507 | 118 | 66 | 158 | 58 | 127 | 366 | 81 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 534 | 0 | 0 | 742 | 0 | 66 | 216 | 0 | 127 | 447 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1274 | | | 1088 | | 351 | 1424 | | 442 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.15 | |
| v/s Ratio Perm | | 0.19 | | | c0.31 | | 0.08 | | | 0.13 | | |
| v/c Ratio | | 0.42 | | | 0.68 | | 0.19 | 0.15 | | 0.29 | 0.34 | |
| Uniform Delay, d1 | | 13.8 | | | 16.2 | | 12.8 | 12.6 | | 13.5 | 13.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | | 3.5 | | 1.2 | 0.2 | | 1.6 | 0.7 | |
| Delay (s) | | 14.9 | | | 19.7 | | 14.0 | 12.8 | | 15.1 | 14.5 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.9 | | | 19.7 | | | 13.1 | | | 14.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 70.8% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 93 | 823 | 6 | 19 | 553 | 236 | 1 | 1 | 9 | 202 | 1 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1548 | | | 3176 | |
| Flt Permitted | 0.42 | 1.00 | | 0.29 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 710 | 3206 | | 508 | 3320 | 1485 | | 1520 | | | 2538 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 98 | 866 | 6 | 20 | 582 | 248 | 1 | 1 | 9 | 213 | 1 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 89 | 0 | 7 | 0 | 0 | 53 | 0 |
| Lane Group Flow (vph) | 98 | 872 | 0 | 20 | 582 | 159 | 0 | 4 | 0 | 0 | 241 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | Perm | | | Perm | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.0 | | | 18.0 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.0 | | | 18.0 | |
| Actuated g/C Ratio | 0.64 | 0.64 | | 0.64 | 0.64 | 0.64 | | 0.25 | | | 0.25 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 454 | 2050 | | 325 | 2123 | 949 | | 379 | | | 634 | |
| v/s Ratio Prot | c0.27 | | | 0.18 | | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.04 | | 0.11 | | 0.00 | | | c0.09 | |
| v/c Ratio | 0.22 | 0.43 | | 0.06 | 0.27 | 0.17 | | 0.01 | | | 0.38 | |
| Uniform Delay, d1 | 5.4 | 6.4 | | 4.9 | 5.7 | 5.2 | | 20.4 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 0.6 | | 0.4 | 0.3 | 0.4 | | 0.1 | | | 1.6 | |
| Delay (s) | 6.5 | 7.1 | | 5.2 | 6.0 | 5.6 | | 20.4 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 7.0 | | | 5.9 | | | 20.4 | | | 24.0 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 72.1 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 56.0% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 124 | 216 | 116 | 94 | 162 | 55 | 130 | 876 | 87 | 122 | 816 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1506 | | 1563 | 1586 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.46 | 1.00 | | 0.24 | 1.00 | | 0.21 | 1.00 | 1.00 | 0.18 | 1.00 | 1.00 |
| Satd. Flow (perm) | 749 | 1506 | | 401 | 1586 | | 323 | 3069 | 1337 | 285 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 131 | 227 | 122 | 99 | 171 | 58 | 137 | 922 | 92 | 128 | 859 | 98 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 14 | 0 | 0 | 0 | 40 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 131 | 326 | 0 | 99 | 215 | 0 | 137 | 922 | 52 | 128 | 859 | 52 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 286 | 390 | | 205 | 410 | | 235 | 1264 | 551 | 222 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.22 | | c0.03 | 0.14 | | c0.04 | c0.30 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.23 | | 0.04 | 0.23 | | 0.04 |
| v/c Ratio | 0.46 | 0.84 | | 0.48 | 0.52 | | 0.58 | 0.73 | 0.09 | 0.58 | 0.67 | 0.10 |
| Uniform Delay, d1 | 22.5 | 29.8 | | 22.7 | 27.0 | | 14.4 | 21.0 | 15.3 | 14.7 | 20.3 | 15.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.63 | 0.79 | 0.52 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.2 | 18.8 | | 7.9 | 4.7 | | 9.4 | 3.5 | 0.3 | 10.5 | 2.9 | 0.4 |
| Delay (s) | 27.7 | 48.5 | | 30.6 | 31.7 | | 18.6 | 20.0 | 8.3 | 25.1 | 23.2 | 15.7 |
| Level of Service | C | D | | C | C | | B | B | A | C | C | B |
| Approach Delay (s) | | 42.9 | | | 31.4 | | | 18.9 | | | 22.7 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 179 | 34 | 20 | 173 | 20 | 22 | 141 | 38 | 37 | 251 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1839 | | | 1851 | | | 1938 | | | 1976 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.95 | | | 0.95 | |
| Satd. Flow (perm) | | 1784 | | | 1794 | | | 1849 | | | 1895 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 23 | 188 | 36 | 21 | 182 | 21 | 23 | 148 | 40 | 39 | 264 | 52 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 238 | 0 | 0 | 218 | 0 | 0 | 198 | 0 | 0 | 345 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 741 | | | 745 | | | 853 | | | 875 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.18 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.23 | | | 0.39 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.6 | | | 11.5 | |
| Progression Factor | | 1.00 | | | 0.65 | | | 1.16 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.6 | | | 1.3 | |
| Delay (s) | | 14.0 | | | 9.2 | | | 12.9 | | | 12.9 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 9.2 | | | 12.9 | | | 12.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.3 | | | HCM Level of Service | | | | | B | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 50.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 190 | 36 | 25 | 180 | 18 | 39 | 199 | 31 | 38 | 206 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1495 | 3062 | | 1576 | 3122 | | 1518 | 3118 | | 1550 | 3074 | |
| Flt Permitted | 0.62 | 1.00 | | 0.60 | 1.00 | | 0.59 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 978 | 3062 | | 1002 | 3122 | | 947 | 3118 | | 981 | 3074 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 25 | 200 | 38 | 26 | 189 | 19 | 41 | 209 | 33 | 40 | 217 | 40 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 25 | 214 | 0 | 26 | 196 | 0 | 41 | 228 | 0 | 40 | 240 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 286 | 895 | | 293 | 913 | | 554 | 1823 | | 574 | 1797 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | 0.07 | | | c0.08 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.04 | | | 0.04 | | |
| v/c Ratio | 0.09 | 0.24 | | 0.09 | 0.21 | | 0.07 | 0.13 | | 0.07 | 0.13 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.7 | 17.4 | | 5.9 | 6.1 | | 5.8 | 6.1 | |
| Progression Factor | 0.89 | 0.91 | | 0.75 | 0.74 | | 1.23 | 1.22 | | 0.40 | 0.36 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.6 | 0.5 | | 0.3 | 0.1 | | 0.2 | 0.2 | |
| Delay (s) | 15.4 | 16.5 | | 13.1 | 13.3 | | 7.5 | 7.5 | | 2.6 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 16.4 | | | 13.3 | | | 7.5 | | | 2.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.5 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.17 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 66 | 165 | 40 | 24 | 153 | 35 | 23 | 245 | 16 | 30 | 321 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3059 | | 1524 | 2940 | | | 1923 | | | 1938 | |
| Flt Permitted | 0.63 | 1.00 | | 0.62 | 1.00 | | | 0.96 | | | 0.96 | |
| Satd. Flow (perm) | 1033 | 3059 | | 996 | 2940 | | | 1852 | | | 1874 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 67 | 168 | 41 | 24 | 156 | 36 | 23 | 250 | 16 | 31 | 328 | 34 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 22 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 67 | 184 | 0 | 24 | 170 | 0 | 0 | 286 | 0 | 0 | 388 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 413 | 1224 | | 398 | 1176 | | | 883 | | | 894 | |
| v/s Ratio Prot | 0.06 | | | 0.06 | | | 0.15 | | | 0.21 | | |
| v/s Ratio Perm | 0.06 | | | 0.02 | | | 0.15 | | | 0.21 | | |
| v/c Ratio | 0.16 | 0.15 | | 0.06 | 0.14 | | | 0.32 | | | 0.43 | |
| Uniform Delay, d1 | 12.5 | 12.5 | | 12.0 | 12.4 | | | 10.5 | | | 11.2 | |
| Progression Factor | 0.98 | 0.91 | | 0.77 | 0.76 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 0.8 | 0.3 | | 0.3 | 0.2 | | | 1.0 | | | 1.5 | |
| Delay (s) | 13.1 | 11.6 | | 9.5 | 9.7 | | | 11.2 | | | 12.7 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 12.0 | | | 9.7 | | | 11.2 | | | 12.7 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 26 | 19 | 153 | 25 | 30 | 230 | 11 | 29 | 360 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1973 | | 1583 | 1976 | | | 1983 | | | 1979 | |
| Flt Permitted | 0.58 | 1.00 | | 0.66 | 1.00 | | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | 1015 | 1973 | | 1092 | 1976 | | | 1853 | | | 1925 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 29 | 21 | 170 | 28 | 33 | 256 | 12 | 32 | 400 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 152 | 0 | 21 | 198 | 0 | 0 | 301 | 0 | 0 | 495 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 312 | 607 | | 336 | 608 | | | 1055 | | | 1096 | |
| v/s Ratio Prot | | 0.08 | | | c0.10 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.16 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.06 | 0.33 | | | 0.29 | | | 0.45 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.3 | | | 7.2 | | | 8.1 | |
| Progression Factor | 0.80 | 0.78 | | 0.92 | 0.92 | | | 0.97 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 1.0 | | 0.4 | 1.4 | | | 0.7 | | | 1.3 | |
| Delay (s) | 14.3 | 14.2 | | 14.9 | 17.3 | | | 7.7 | | | 9.5 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.2 | | | 17.1 | | | 7.7 | | | 9.5 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 56.6% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 51 | 12 | 91 | 2 | 5 | 9 | 55 | 223 | 5 | 3 | 442 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1726 | | 1702 | 1815 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1333 | 1726 | | 1225 | 1815 | | 693 | 1647 | 1428 | 1049 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 13 | 101 | 2 | 6 | 10 | 61 | 248 | 6 | 3 | 491 | 80 |
| RTOR Reduction (vph) | 0 | 73 | 0 | 0 | 7 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 57 | 41 | 0 | 2 | 9 | 0 | 61 | 248 | 4 | 3 | 491 | 52 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 339 | 503 | | 416 | 988 | 857 | 629 | 1200 | 898 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | 0.15 | | | c0.25 | |
| v/s Ratio Perm | c0.04 | | | 0.00 | | | 0.09 | | 0.00 | 0.00 | | 0.04 |
| v/c Ratio | 0.15 | 0.09 | | 0.01 | 0.02 | | 0.15 | 0.25 | 0.00 | 0.00 | 0.41 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.7 | 6.1 | 5.2 | 5.2 | 6.9 | 5.4 |
| Progression Factor | 1.43 | 2.88 | | 1.00 | 1.00 | | 0.79 | 0.73 | 0.87 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.0 | 0.1 | | 0.6 | 0.5 | 0.0 | 0.0 | 1.0 | 0.1 |
| Delay (s) | 26.3 | 50.5 | | 17.1 | 17.1 | | 5.1 | 5.0 | 4.6 | 5.2 | 7.9 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 42.5 | | | 17.1 | | | 5.0 | | | 7.6 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |


No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 251 | 163 | 157 | 195 | 0 | 0 | 0 | 0 | 109 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2904 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2904 | | 725 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 264 | 172 | 165 | 205 | 0 | 0 | 0 | 0 | 115 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 330 | 0 | 165 | 205 | 0 | 0 | 0 | 0 | 115 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 567 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.11 | | c0.06 | 0.06 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.09 | | | | | | | | |
| v/c Ratio | | 0.35 | | 0.29 | 0.11 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.3 | | 13.3 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.17 | 2.12 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 1.2 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 30.0 | 23.5 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 26.4 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 60.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

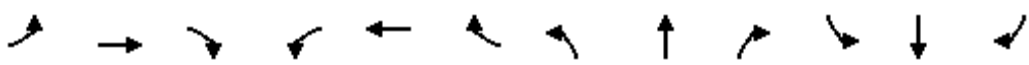
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 219 | 0 | 0 | 279 | 109 | 73 | 511 | 215 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2844 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.39 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 683 | 3196 | | | 2844 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 231 | 0 | 0 | 294 | 115 | 77 | 538 | 226 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 160 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 231 | 0 | 0 | 369 | 0 | 77 | 538 | 66 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 716 | 1974 | | | 725 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.13 | | 0.04 | c0.30 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.51 | | 0.15 | 1.03 | 0.14 | | | |
| Uniform Delay, d1 | 10.2 | 8.0 | | | 32.5 | | 26.6 | 36.0 | 26.5 | | | |
| Progression Factor | 0.43 | 0.44 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 2.5 | | 0.6 | 46.3 | 0.7 | | | |
| Delay (s) | 5.0 | 3.6 | | | 35.1 | | 27.2 | 82.3 | 27.2 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.2 | | | 35.1 | | | 62.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.0 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 60.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 484 | 455 | 77 | 507 | 0 | 0 | 0 | 0 | 9 | 432 | 269 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3097 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3097 | | 203 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 509 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 9 | 455 | 283 |
| RTOR Reduction (vph) | 0 | 171 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 187 |
| Lane Group Flow (vph) | 0 | 817 | 0 | 81 | 534 | 0 | 0 | 0 | 0 | 9 | 455 | 96 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 381 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.26 | | 0.04 | c0.16 | | | | | 0.01 | c0.14 | 0.06 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.73 | | 0.21 | 0.28 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 27.8 | | 14.0 | 10.5 | | | | | 21.9 | 25.4 | 23.2 |
| Progression Factor | | 1.00 | | 1.02 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.3 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 32.1 | | 15.1 | 12.8 | | | | | 22.0 | 26.6 | 24.0 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 32.1 | | | 13.1 | | | 0.0 | | | 25.6 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 394 | 99 | 0 | 0 | 142 | 5 | 441 | 455 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3172 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.65 | 0.72 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1011 | 2310 | | | 3172 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 415 | 104 | 0 | 0 | 149 | 5 | 464 | 479 | 58 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 37 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 207 | 312 | 0 | 0 | 151 | 0 | 464 | 479 | 21 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 680 | 1466 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.30 | 0.29 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.21 | | | 0.32 | | 0.81 | 0.78 | 0.04 | | | |
| Uniform Delay, d1 | 14.0 | 13.5 | | | 37.9 | | 28.3 | 27.9 | 20.1 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.8 | | 11.6 | 9.6 | 0.1 | | | |
| Delay (s) | 4.3 | 3.8 | | | 39.7 | | 39.8 | 37.6 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 4.0 | | | 39.7 | | | 37.6 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.4 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 78 | 210 | 102 | 105 | 231 | 107 | 80 | 663 | 72 | 99 | 875 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2936 | | | 2923 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.77 | | | 0.76 | | 0.17 | 1.00 | 1.00 | 0.28 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2281 | | | 2240 | | 267 | 3069 | 1309 | 439 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 80 | 216 | 105 | 108 | 238 | 110 | 82 | 684 | 74 | 102 | 902 | 66 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 36 | 0 | 0 | 0 | 45 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 359 | 0 | 0 | 420 | 0 | 82 | 684 | 29 | 102 | 902 | 33 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1012 | | | 738 | | 171 | 1210 | 508 | 236 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.22 | | 0.02 | c0.29 | |
| v/s Ratio Perm | | 0.13 | | | c0.19 | | 0.18 | | 0.02 | 0.16 | | 0.03 |
| v/c Ratio | | 0.35 | | | 0.57 | | 0.48 | 0.57 | 0.06 | 0.43 | 0.74 | 0.07 |
| Uniform Delay, d1 | | 16.6 | | | 23.5 | | 16.5 | 20.1 | 16.3 | 15.8 | 22.0 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.30 | 0.68 | 0.54 | 1.10 | 1.17 | 1.79 |
| Incremental Delay, d2 | | 1.0 | | | 3.2 | | 8.8 | 1.8 | 0.2 | 4.2 | 3.0 | 0.2 |
| Delay (s) | | 17.6 | | | 26.7 | | 30.3 | 15.4 | 9.0 | 21.5 | 28.8 | 29.5 |
| Level of Service | | B | | | C | | C | B | A | C | C | C |
| Approach Delay (s) | | 17.6 | | | 26.7 | | | 16.3 | | | 28.1 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 22.8 | | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 85.0 | | | | | Sum of lost time (s) | | 15.5 | | | |
| Intersection Capacity Utilization | | 71.2% | | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 305 | 0 | 0 | 325 | 81 | 52 | 43 | 32 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1730 | | | 1701 | | | 1654 | | | | |
| Flt Permitted | | 0.86 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1500 | | | 1701 | | | 1654 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 80 | 321 | 0 | 0 | 342 | 85 | 55 | 45 | 34 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 401 | 0 | 0 | 413 | 0 | 0 | 115 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 877 | | | 994 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.24 | | | | | | | |
| v/s Ratio Perm | | c0.27 | | | | | | 0.07 | | | | |
| v/c Ratio | | 0.46 | | | 0.42 | | | 0.24 | | | | |
| Uniform Delay, d1 | | 7.7 | | | 7.4 | | | 17.5 | | | | |
| Progression Factor | | 1.00 | | | 0.62 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.7 | | | 1.2 | | | 1.2 | | | | |
| Delay (s) | | 9.4 | | | 5.7 | | | 18.7 | | | | |
| Level of Service | | A | | | A | | | B | | | | |
| Approach Delay (s) | | 9.4 | | | 5.7 | | | 18.7 | | | 0.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 62.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 19 | 289 | 27 | 37 | 333 | 48 | 27 | 112 | 37 | 52 | 148 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1956 | | | 1939 | | | 2969 | | | 2987 | |
| Flt Permitted | | 0.97 | | | 0.95 | | | 0.90 | | | 0.87 | |
| Satd. Flow (perm) | | 1901 | | | 1849 | | | 2681 | | | 2614 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 20 | 304 | 28 | 39 | 351 | 51 | 28 | 118 | 39 | 55 | 156 | 44 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 23 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 347 | 0 | 0 | 434 | 0 | 0 | 162 | 0 | 0 | 229 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 877 | | | 853 | | | 1114 | | | 1086 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.18 | | | 0.23 | | | 0.06 | | | 0.09 | |
| v/c Ratio | | 0.40 | | | 0.51 | | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | | 11.5 | | | 12.3 | | | 11.8 | | | 12.2 | |
| Progression Factor | | 0.58 | | | 0.42 | | | 1.10 | | | 0.43 | |
| Incremental Delay, d2 | | 1.2 | | | 2.0 | | | 0.3 | | | 0.4 | |
| Delay (s) | | 7.9 | | | 7.2 | | | 13.3 | | | 5.7 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 7.9 | | | 7.2 | | | 13.3 | | | 5.7 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 8.0 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 71.5% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 255 | 39 | 78 | 429 | 82 | 43 | 217 | 97 | 79 | 215 | 59 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1508 | 3033 | | 1568 | 3075 | | 1586 | 2962 | | 1585 | 3075 | |
| Flt Permitted | 0.37 | 1.00 | | 0.56 | 1.00 | | 0.58 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 586 | 3033 | | 919 | 3075 | | 961 | 2962 | | 922 | 3075 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 43 | 268 | 41 | 82 | 452 | 86 | 45 | 228 | 102 | 83 | 226 | 62 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 24 | 0 | 0 | 47 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 43 | 290 | 0 | 82 | 514 | 0 | 45 | 283 | 0 | 83 | 259 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 198 | 1027 | | 311 | 1041 | | 517 | 1595 | | 496 | 1656 | |
| v/s Ratio Prot | | 0.10 | | | c0.17 | | | c0.10 | | | 0.08 | |
| v/s Ratio Perm | 0.07 | | | 0.09 | | | 0.05 | | | 0.09 | | |
| v/c Ratio | 0.22 | 0.28 | | 0.26 | 0.49 | | 0.09 | 0.18 | | 0.17 | 0.16 | |
| Uniform Delay, d1 | 15.4 | 15.7 | | 15.6 | 17.1 | | 7.3 | 7.7 | | 7.6 | 7.6 | |
| Progression Factor | 0.78 | 0.75 | | 0.92 | 0.93 | | 0.83 | 0.81 | | 1.09 | 1.09 | |
| Incremental Delay, d2 | 2.4 | 0.7 | | 2.0 | 1.6 | | 0.3 | 0.2 | | 0.7 | 0.2 | |
| Delay (s) | 14.3 | 12.4 | | 16.4 | 17.4 | | 6.3 | 6.5 | | 9.0 | 8.4 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.7 | | | 17.3 | | | 6.4 | | | 8.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.1 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 50.2% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 68 | 83 | 382 | 48 | 43 | 226 | 57 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1507 | 3013 | | 1429 | 3719 | | | 3485 | | | 3520 | |
| Flt Permitted | 0.47 | 1.00 | | 0.53 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 748 | 3013 | | 792 | 3719 | | | 3045 | | | 3123 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 58 | 302 | 72 | 87 | 402 | 51 | 45 | 238 | 60 | 48 | 294 | 67 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 15 | 0 | 0 | 28 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 58 | 342 | 0 | 87 | 438 | 0 | 0 | 315 | 0 | 0 | 384 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 357 | 1437 | | 378 | 1774 | | | 1218 | | | 1249 | |
| v/s Ratio Prot | | 0.11 | | | c0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.11 | | | | 0.10 | | | c0.12 | |
| v/c Ratio | 0.16 | 0.24 | | 0.23 | 0.25 | | | 0.26 | | | 0.31 | |
| Uniform Delay, d1 | 9.6 | 10.0 | | 10.0 | 10.1 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.53 | 1.68 | | 1.14 | 1.13 | | | 0.47 | | | 0.68 | |
| Incremental Delay, d2 | 1.0 | 0.4 | | 1.3 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 15.7 | 17.2 | | 12.7 | 11.7 | | | 6.6 | | | 9.7 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 17.0 | | | 11.9 | | | 6.6 | | | 9.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 11.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.27 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 82 | 246 | 82 | 88 | 266 | 88 | 114 | 79 | 45 | 45 | 79 | 114 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1669 | 1436 | | 3083 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.82 | | | 0.71 | | | 0.91 | |
| Satd. Flow (perm) | | 1352 | 1436 | | 2540 | | | 1363 | | | 1681 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 86 | 259 | 86 | 93 | 280 | 93 | 120 | 83 | 47 | 47 | 83 | 120 |
| RTOR Reduction (vph) | 0 | 0 | 41 | 0 | 34 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 345 | 45 | 0 | 432 | 0 | 0 | 237 | 0 | 0 | 199 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 707 | 751 | | 1329 | | | 440 | | | 543 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.26 | 0.03 | | 0.17 | | | c0.17 | | | 0.12 | |
| v/c Ratio | | 0.49 | 0.06 | | 0.33 | | | 0.54 | | | 0.37 | |
| Uniform Delay, d1 | | 9.9 | 7.6 | | 8.9 | | | 18.0 | | | 16.9 | |
| Progression Factor | | 1.83 | 4.37 | | 0.52 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.4 | 0.1 | | 0.6 | | | 4.7 | | | 1.9 | |
| Delay (s) | | 20.5 | 33.5 | | 5.3 | | | 22.7 | | | 18.8 | |
| Level of Service | | C | C | | A | | | C | | | B | |
| Approach Delay (s) | | 23.1 | | | 5.3 | | | 22.7 | | | 18.8 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 74.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 45 | 253 | 18 | 25 | 305 | 58 | 24 | 130 | 46 | 62 | 145 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1442 | 3037 | | 1563 | 3017 | | | 3582 | | | 3604 | |
| Flt Permitted | 0.52 | 1.00 | | 0.58 | 1.00 | | | 0.91 | | | 0.85 | |
| Satd. Flow (perm) | 787 | 3037 | | 949 | 3017 | | | 3266 | | | 3096 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 47 | 266 | 19 | 26 | 321 | 61 | 25 | 137 | 48 | 65 | 153 | 64 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 24 | 0 | 0 | 28 | 0 | 0 | 37 | 0 |
| Lane Group Flow (vph) | 47 | 277 | 0 | 26 | 358 | 0 | 0 | 182 | 0 | 0 | 245 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 363 | 1402 | | 438 | 1392 | | | 1357 | | | 1286 | |
| v/s Ratio Prot | | 0.09 | | | c0.12 | | | | | | | |
| v/s Ratio Perm | 0.06 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.13 | 0.20 | | 0.06 | 0.26 | | | 0.13 | | | 0.19 | |
| Uniform Delay, d1 | 10.0 | 10.4 | | 9.7 | 10.7 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.77 | 0.78 | | 0.75 | 0.58 | | | 1.06 | | | 0.40 | |
| Incremental Delay, d2 | 0.7 | 0.3 | | 0.2 | 0.3 | | | 0.2 | | | 0.3 | |
| Delay (s) | 8.3 | 8.3 | | 7.4 | 6.5 | | | 12.7 | | | 5.2 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 8.3 | | | 6.5 | | | 12.7 | | | 5.2 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.8 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 43 | 434 | 18 | 83 | 480 | 213 | 21 | 118 | 109 | 323 | 248 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3288 | | | 3167 | | | 3088 | | | 3182 | |
| Flt Permitted | | 0.82 | | | 0.83 | | | 0.92 | | | 0.71 | |
| Satd. Flow (perm) | | 2716 | | | 2640 | | | 2852 | | | 2325 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 45 | 457 | 19 | 87 | 505 | 224 | 22 | 124 | 115 | 340 | 261 | 81 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 60 | 0 | 0 | 62 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 517 | 0 | 0 | 756 | 0 | 0 | 199 | 0 | 0 | 666 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 1045 | | | 1015 | | | 1353 | | | 608 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.19 | | | c0.29 | | | 0.05 | | | c0.29 | |
| v/c Ratio | | 0.49 | | | 0.74 | | | 0.15 | | | 1.19dl | |
| Uniform Delay, d1 | | 15.2 | | | 17.2 | | | 10.1 | | | 24.0 | |
| Progression Factor | | 1.49 | | | 1.00 | | | 1.00 | | | 0.80 | |
| Incremental Delay, d2 | | 1.7 | | | 5.0 | | | 0.2 | | | 64.5 | |
| Delay (s) | | 24.3 | | | 22.2 | | | 10.3 | | | 83.6 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 24.3 | | | 22.2 | | | 10.3 | | | 83.6 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 39.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 82.5% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 867 | 123 | 46 | 758 | 0 | 77 | 0 | 35 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1618 | | | | |
| Flt Permitted | | 1.00 | | | 0.82 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2552 | | | 1330 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 913 | 129 | 48 | 798 | 0 | 81 | 0 | 37 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1027 | 0 | 0 | 846 | 0 | 0 | 100 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 936 | | | 236 | | | | | |
| v/s Ratio Prot | c0.34 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | c0.08 | | | | | |
| v/c Ratio | 0.52 | | | 0.90 | | | 0.42 | | | | | |
| Uniform Delay, d1 | 8.6 | | | 27.0 | | | 32.9 | | | | | |
| Progression Factor | 0.06 | | | 1.35 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 13.1 | | | 5.5 | | | | | |
| Delay (s) | 0.9 | | | 49.6 | | | 38.4 | | | | | |
| Level of Service | A | | | D | | | D | | | | | |
| Approach Delay (s) | 0.9 | | | 49.6 | | | 38.4 | | | 0.0 | | |
| Approach LOS | A | | | D | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 23.7 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.69 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 72.2% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 216 | 629 | 22 | 108 | 584 | 178 | 58 | 4 | 103 | 205 | 10 | 205 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.33 | 1.00 | | 0.38 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 544 | 3194 | | 662 | 3320 | 1485 | | 1594 | | 769 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 227 | 662 | 23 | 114 | 615 | 187 | 61 | 4 | 108 | 216 | 11 | 216 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 82 | 0 | 92 | 0 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 227 | 683 | 0 | 114 | 615 | 105 | 0 | 81 | 0 | 216 | 11 | 88 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 56.0 | 45.4 | | 48.1 | 40.5 | 50.5 | | 11.0 | | 24.0 | 24.0 | 36.5 |
| Effective Green, g (s) | 56.0 | 45.4 | | 48.1 | 40.5 | 50.5 | | 11.0 | | 24.0 | 24.0 | 36.5 |
| Actuated g/C Ratio | 0.62 | 0.50 | | 0.53 | 0.45 | 0.56 | | 0.12 | | 0.27 | 0.27 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 478 | 1611 | | 438 | 1494 | 833 | | 195 | | 304 | 466 | 602 |
| v/s Ratio Prot | c0.07 | 0.21 | | 0.02 | 0.19 | 0.01 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.23 | | | 0.12 | | 0.06 | | 0.05 | | c0.11 | | 0.04 |
| v/c Ratio | 0.47 | 0.42 | | 0.26 | 0.41 | 0.13 | | 0.41 | | 0.71 | 0.02 | 0.15 |
| Uniform Delay, d1 | 8.2 | 14.1 | | 10.5 | 16.7 | 9.3 | | 36.5 | | 28.4 | 24.4 | 16.9 |
| Progression Factor | 2.60 | 1.95 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.7 | | 0.4 | 0.8 | 0.1 | | 1.9 | | 7.6 | 0.0 | 0.2 |
| Delay (s) | 22.1 | 28.2 | | 10.9 | 17.5 | 9.4 | | 38.5 | | 36.0 | 24.4 | 17.1 |
| Level of Service | C | C | | B | B | A | | D | | D | C | B |
| Approach Delay (s) | | 26.7 | | | 15.1 | | | 38.5 | | | 26.5 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 60.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013



| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 509 | 429 | 2 | 322 | 0 | 0 | 0 | 0 | 18 | 0 | 547 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | | | | | | | |
| Hourly flow rate (vph) | 0 | 536 | 452 | 2 | 339 | 0 | 0 | 0 | 0 | 19 | 0 | 576 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 339 | | | 536 | | | 709 | 879 | 268 | 611 | 879 | 169 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 339 | | | 536 | | | 709 | 879 | 268 | 611 | 879 | 169 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 95 | 100 | 32 | | | | | | | |
| cM capacity (veh/h) | 1210 | | | 1021 | | | 101 | 282 | 727 | 375 | 282 | 842 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 268 | 268 | 452 | 115 | 226 | 19 | 576 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 19 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 452 | 0 | 0 | 0 | 576 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 1021 | 1700 | 375 | 842 | | | | | | | | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.27 | 0.00 | 0.13 | 0.05 | 0.68 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 4 | 139 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 15.1 | 18.0 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 17.9 | | | | | | | | | | | | |
| Approach LOS | | | | | | C | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | 5.5 | | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | 51.9% | ICU Level of Service | | A | | | | | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013






















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 527 | 0 | 324 | 0 | 0 | 0 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 555 | 0 | 341 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 277 | 277 | 341 | | | |
| Volume Left (vph) | 277 | 277 | 341 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.1 | 6.1 | 5.5 | | | |
| Degree Utilization, x | 0.47 | 0.47 | 0.52 | | | |
| Capacity (veh/h) | 577 | 579 | 636 | | | |
| Control Delay (s) | 13.1 | 13.1 | 14.3 | | | |
| Approach Delay (s) | 13.1 | | 14.3 | | | |
| Approach LOS | B | | B | | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.5 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 41.5% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | |  |   | | | | | |   | |
| Volume (vph) | 0 | 472 | 64 | 188 | 485 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3073 | |
| Flt Permitted | | 1.00 | | 0.36 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 617 | 3210 | | | | | | 3073 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 497 | 67 | 198 | 511 | 0 | 0 | 0 | 0 | 106 | 22 | 61 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 552 | 0 | 198 | 511 | 0 | 0 | 0 | 0 | 0 | 147 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 472 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.18 | | c0.05 | 0.16 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.19 | | | | | | | | |
| v/c Ratio | | 0.41 | | 0.42 | 0.28 | | | | | | 0.15 | |
| Uniform Delay, d1 | | 17.1 | | 14.6 | 9.1 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.33 | 0.20 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 2.3 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.1 | | 7.1 | 2.1 | | | | | | 21.1 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.1 | | | 3.5 | | | 0.0 | | | 21.1 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 43.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 609 | 124 | 64 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3128 | | | 4507 | | | | |
| Flt Permitted | 0.25 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 436 | 3320 | | | 3128 | | | 4507 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 100 | 503 | 0 | 0 | 641 | 131 | 67 | 95 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 42 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 503 | 0 | 0 | 752 | 0 | 0 | 181 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 390 | 1875 | | | 1288 | | | 1432 | | | | |
| v/s Ratio Prot | 0.03 | c0.15 | | | c0.24 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.11 | | | | | | | | | | | |
| v/c Ratio | 0.26 | 0.27 | | | 0.58 | | | 0.13 | | | | |
| Uniform Delay, d1 | 16.5 | 9.5 | | | 19.4 | | | 20.6 | | | | |
| Progression Factor | 0.38 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.5 | 0.3 | | | 1.9 | | | 0.2 | | | | |
| Delay (s) | 7.8 | 3.3 | | | 21.3 | | | 20.8 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.1 | | | 21.3 | | | 20.8 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 43.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 342 | 114 | 79 | 366 | 79 | 129 | 78 | 27 | 29 | 85 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2976 | | | 3006 | | | 1842 | | | 1769 | |
| Flt Permitted | | 0.69 | | | 0.75 | | | 0.73 | | | 0.95 | |
| Satd. Flow (perm) | | 2070 | | | 2273 | | | 1379 | | | 1690 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 120 | 360 | 120 | 83 | 385 | 83 | 136 | 82 | 28 | 31 | 89 | 148 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 22 | 0 | 0 | 7 | 0 | 0 | 69 | 0 |
| Lane Group Flow (vph) | 0 | 566 | 0 | 0 | 529 | 0 | 0 | 239 | 0 | 0 | 199 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 732 | | | 804 | | | 679 | | | 832 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | | | 0.23 | | | c0.17 | | | 0.12 | |
| v/c Ratio | | 0.77 | | | 0.66 | | | 0.35 | | | 0.24 | |
| Uniform Delay, d1 | | 18.7 | | | 17.7 | | | 10.1 | | | 9.5 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 7.8 | | | 4.2 | | | 1.4 | | | 0.7 | |
| Delay (s) | | 26.5 | | | 21.9 | | | 11.6 | | | 10.2 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 26.5 | | | 21.9 | | | 11.6 | | | 10.2 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 78.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 201 | 88 | 159 | 311 | 65 | 118 | 511 | 64 | 91 | 898 | 140 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.14 | 1.00 | 1.00 | 0.36 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 214 | 3069 | 1333 | 576 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 93 | 167 | 327 | 68 | 124 | 538 | 67 | 96 | 945 | 147 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 43 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 167 | 374 | 0 | 124 | 538 | 24 | 96 | 945 | 54 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 182 | 1119 | 486 | 311 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.05 | 0.18 | | 0.02 | c0.30 | |
| v/s Ratio Perm | 0.11 | | | c0.15 | | | 0.24 | | 0.02 | 0.11 | | 0.04 |
| v/c Ratio | 0.37 | 0.25 | | 0.49 | 0.31 | | 0.68 | 0.48 | 0.05 | 0.31 | 0.84 | 0.11 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 20.7 | 21.3 | | 17.6 | 20.8 | 17.5 | 15.3 | 24.7 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.43 | 1.05 | 2.41 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 4.9 | 0.7 | | 18.7 | 1.5 | 0.2 | 1.9 | 5.7 | 0.3 |
| Delay (s) | 23.0 | 21.5 | | 25.5 | 21.9 | | 36.3 | 22.3 | 17.7 | 23.9 | 31.7 | 43.5 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 23.0 | | | 24.2 | | | 32.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 69.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 48 | 295 | 30 | 33 | 389 | 24 | 31 | 95 | 39 | 36 | 122 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2000 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.92 | 1.00 | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1782 | 1466 | | 1912 | 1480 | | 1869 | 1506 | | 1870 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 311 | 32 | 35 | 409 | 25 | 33 | 100 | 41 | 38 | 128 | 66 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 0 | 362 | 15 | 0 | 444 | 12 | 0 | 133 | 17 | 0 | 166 | 27 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 822 | 677 | | 882 | 683 | | 776 | 626 | | 777 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.23 | 0.01 | | 0.07 | 0.01 | | 0.09 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.50 | 0.02 | | 0.17 | 0.03 | | 0.21 | 0.04 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.3 | 9.5 | | 12.0 | 11.2 | | 12.2 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.65 | 0.58 | | 1.22 | 1.56 | | 0.97 | 0.84 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 2.0 | 0.0 | | 0.5 | 0.1 | | 0.6 | 0.1 |
| Delay (s) | | 13.5 | 9.6 | | 10.0 | 5.6 | | 15.1 | 17.6 | | 12.5 | 9.7 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 13.2 | | | 9.8 | | | 15.7 | | | 11.7 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 82.7% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 305 | 20 | 41 | 247 | 31 | 10 | 107 | 21 | 104 | 203 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3070 | | 1550 | 3047 | | 1550 | 3023 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.55 | 1.00 | | 0.57 | 1.00 | | 0.67 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3070 | | 891 | 3047 | | 933 | 3023 | | 1087 | 2991 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 321 | 21 | 43 | 260 | 33 | 11 | 113 | 22 | 109 | 214 | 65 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 15 | 0 | 0 | 13 | 0 | 0 | 38 | 0 |
| Lane Group Flow (vph) | 79 | 335 | 0 | 43 | 278 | 0 | 11 | 122 | 0 | 109 | 241 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1511 | | 302 | 1031 | | 388 | 1256 | | 452 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.09 | | | 0.04 | | | 0.08 | |
| v/s Ratio Perm | | | | 0.05 | | | 0.01 | | | c0.10 | | |
| v/c Ratio | 0.47 | 0.22 | | 0.14 | 0.27 | | 0.03 | 0.10 | | 0.24 | 0.19 | |
| Uniform Delay, d1 | 27.3 | 9.4 | | 14.9 | 15.7 | | 11.2 | 11.6 | | 12.3 | 12.1 | |
| Progression Factor | 0.92 | 0.50 | | 0.77 | 0.74 | | 0.89 | 0.94 | | 1.12 | 1.12 | |
| Incremental Delay, d2 | 8.9 | 0.3 | | 1.0 | 0.6 | | 0.1 | 0.2 | | 1.3 | 0.3 | |
| Delay (s) | 34.1 | 5.0 | | 12.4 | 12.2 | | 10.2 | 11.0 | | 15.1 | 13.8 | |
| Level of Service | C | A | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 10.5 | | | 12.3 | | | 10.9 | | | 14.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 37.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 63 | 263 | 68 | 197 | 320 | 61 | 25 | 245 | 20 | 55 | 270 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3003 | | 1550 | 3025 | | | 3272 | | | 3230 | |
| Flt Permitted | 0.52 | 1.00 | | 0.95 | 1.00 | | | 0.91 | | | 0.87 | |
| Satd. Flow (perm) | 841 | 3003 | | 1550 | 3025 | | | 2982 | | | 2820 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 66 | 277 | 72 | 207 | 337 | 64 | 26 | 258 | 21 | 58 | 284 | 53 |
| RTOR Reduction (vph) | 0 | 35 | 0 | 0 | 24 | 0 | 0 | 9 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 66 | 314 | 0 | 207 | 377 | 0 | 0 | 296 | 0 | 0 | 376 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 259 | 924 | | 143 | 1350 | | | 1147 | | | 1085 | |
| v/s Ratio Prot | c0.10 | | | c0.13 | | | 0.12 | | | | | |
| v/s Ratio Perm | 0.08 | | | | | | 0.10 | | | c0.13 | | |
| v/c Ratio | 0.25 | 0.34 | | 1.45 | 0.28 | | | 0.26 | | | 0.35 | |
| Uniform Delay, d1 | 16.9 | 17.4 | | 29.5 | 11.4 | | | 13.7 | | | 14.2 | |
| Progression Factor | 0.65 | 0.61 | | 1.29 | 1.13 | | | 0.76 | | | 0.73 | |
| Incremental Delay, d2 | 2.3 | 1.0 | | 224.5 | 0.3 | | | 0.5 | | | 0.9 | |
| Delay (s) | 13.3 | 11.5 | | 262.6 | 13.2 | | | 11.0 | | | 11.3 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 11.8 | | | 98.1 | | | 11.0 | | | 11.3 | | |
| Approach LOS | B | | | F | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.0 | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 54.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 295 | 16 | 73 | 587 | 73 | 52 | 108 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1616 | | | 1601 | | | 3248 | | | | |
| Flt Permitted | | 0.96 | | | 0.93 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1557 | | | 1503 | | | 3248 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 17 | 311 | 17 | 77 | 618 | 77 | 55 | 114 | 171 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 130 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 342 | 0 | 0 | 767 | 0 | 0 | 210 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.6 | | | 41.6 | | | 15.4 | | | | |
| Effective Green, g (s) | | 41.6 | | | 41.6 | | | 15.4 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 996 | | | 962 | | | 770 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.51 | | | 0.06 | | | | |
| v/c Ratio | | 0.34 | | | 0.80 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 8.6 | | | 20.2 | | | | |
| Progression Factor | | 1.59 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 6.8 | | | 0.8 | | | | |
| Delay (s) | | 9.5 | | | 15.4 | | | 21.0 | | | | |
| Level of Service | | A | | | B | | | C | | | | |
| Approach Delay (s) | | 9.5 | | | 15.4 | | | 21.0 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 80.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 73 | 374 | 569 | 38 | 117 | 157 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 81 | 416 | 632 | 42 | 130 | 174 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.84 | | | | 0.84 | 0.84 |
| vC, conflicting volume | 691 | | | | 1254 | 675 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 532 | | | | 1206 | 512 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 90 | | | | 14 | 62 |
| cM capacity (veh/h) | 842 | | | | 152 | 464 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 497 | 674 | 130 | 174 | | |
| Volume Left | 81 | 0 | 130 | 0 | | |
| Volume Right | 0 | 42 | 0 | 174 | | |
| cSH | 842 | 1700 | 152 | 464 | | |
| Volume to Capacity | 0.10 | 0.40 | 0.86 | 0.38 | | |
| Queue Length 95th (ft) | 8 | 0 | 144 | 43 | | |
| Control Delay (s) | 2.6 | 0.0 | 97.4 | 17.4 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 2.6 | 0.0 | 51.5 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 77.0% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 664 | 0 | 1 | 595 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1526 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1526 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 699 | 0 | 1 | 626 | 3 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 699 | 0 | 0 | 627 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.40 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.36 | | |
| v/c Ratio | 0.58 | | | 0.98 | 0.03 | |
| Uniform Delay, d1 | 6.6 | | | 26.8 | 29.8 | |
| Progression Factor | 0.06 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.3 | | | 32.0 | 0.2 | |
| Delay (s) | 1.7 | | | 58.8 | 30.1 | |
| Level of Service | A | | | E | C | |
| Approach Delay (s) | 1.7 | | | 58.8 | 30.1 | |
| Approach LOS | A | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 28.7 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.64 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 46.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 226 | 584 | 30 | 383 | 0 | 0 | 0 | 0 | 17 | 6 | 240 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 0 | 238 | 615 | 32 | 403 | 0 | 0 | 0 | 0 | 18 | 6 | 253 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 403 | | | 238 | | | 1015 | 1012 | 426 | 585 | 704 | 403 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 403 | | | 238 | | | 1015 | 1012 | 426 | 585 | 704 | 403 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 98 | | | 100 | 100 | 100 | 95 | 98 | 58 |
| cM capacity (veh/h) | 1166 | | | 1312 | | | 109 | 235 | 582 | 391 | 355 | 597 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 159 | 694 | 435 | 24 | 253 | | | | | | | |
| Volume Left | 0 | 0 | 32 | 18 | 0 | | | | | | | |
| Volume Right | 0 | 615 | 0 | 0 | 253 | | | | | | | |
| cSH | 1700 | 1700 | 1312 | 381 | 597 | | | | | | | |
| Volume to Capacity | 0.09 | 0.41 | 0.02 | 0.06 | 0.42 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 5 | 52 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 15.1 | 15.4 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 15.4 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.4% | | | ICU Level of Service | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 243 | 0 | 414 | 0 | 0 | 0 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 256 | 0 | 436 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 128 | 128 | 436 | | | |
| Volume Left (vph) | 128 | 128 | 436 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 4.9 | | | |
| Degree Utilization, x | 0.22 | 0.22 | 0.59 | | | |
| Capacity (veh/h) | 550 | 551 | 721 | | | |
| Control Delay (s) | 9.8 | 9.8 | 14.7 | | | |
| Approach Delay (s) | 9.8 | | 14.7 | | | |
| Approach LOS | A | | B | | | |
| Intersection Summary | | | | | | |
| Delay | | | 12.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 38.2% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 482 | 337 | 253 | 597 | 0 | 0 | 0 | 0 | 279 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3424 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3424 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 507 | 355 | 266 | 628 | 0 | 0 | 0 | 0 | 294 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 234 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 507 | 121 | 0 | 894 | 0 | 0 | 0 | 0 | 162 | 558 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 38.9 | 38.9 | | 68.3 | | | | | 23.0 | 23.0 | 67.9 |
| Effective Green, g (s) | | 38.9 | 38.9 | | 68.3 | | | | | 23.0 | 23.0 | 67.9 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 773 | 300 | | 1462 | | | | | 195 | 547 | 481 |
| v/s Ratio Prot | | c0.16 | | | c0.26 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.10 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.66 | 0.40 | | 0.61 | | | | | 0.83 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 54.5 | 50.8 | | 35.6 | | | | | 66.6 | 68.5 | 28.6 |
| Progression Factor | | 1.00 | 1.00 | | 0.04 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.3 | 4.0 | | 0.1 | | | | | 24.9 | 43.6 | 0.2 |
| Delay (s) | | 58.8 | 54.8 | | 1.6 | | | | | 91.5 | 112.1 | 28.8 |
| Level of Service | | E | D | | A | | | | | F | F | C |
| Approach Delay (s) | | 57.2 | | | 1.6 | | | 0.0 | | | 91.8 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.8 | | |
| Intersection Capacity Utilization | | | 73.6% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 290 | 472 | 0 | 0 | 537 | 132 | 313 | 204 | 185 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3065 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3065 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 305 | 497 | 0 | 0 | 565 | 139 | 329 | 215 | 195 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 59 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 305 | 497 | 0 | 0 | 565 | 53 | 250 | 430 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 83.7 | 83.7 | | | 36.6 | 36.6 | 12.7 | 12.7 | | | | |
| Effective Green, g (s) | 83.7 | 83.7 | | | 36.6 | 36.6 | 12.7 | 12.7 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 840 | 1795 | | | 734 | 340 | 124 | 243 | | | | |
| v/s Ratio Prot | c0.19 | 0.14 | | | c0.18 | | c0.16 | 0.14 | | | | |
| v/s Ratio Perm | | | | | 0.04 | | | | | | | |
| v/c Ratio | 0.36 | 0.28 | | | 0.77 | 0.16 | 2.02 | 1.77 | | | | |
| Uniform Delay, d1 | 22.5 | 21.3 | | | 57.8 | 49.4 | 73.7 | 73.7 | | | | |
| Progression Factor | 0.01 | 0.02 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 4.9 | 0.2 | 484.4 | 362.7 | | | | |
| Delay (s) | 0.5 | 0.4 | | | 62.6 | 49.6 | 558.1 | 436.4 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 0.4 | | | 60.1 | | 477.5 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 176.2 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.64 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 62.2% | | | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 138 | 254 | 134 | 87 | 206 | 66 | 104 | 504 | 68 | 96 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1572 | 1600 | 1373 | 1593 | 1778 | | 1578 | 3016 | | 1537 | 3001 | |
| Flt Permitted | 0.43 | 1.00 | 1.00 | 0.50 | 1.00 | | 0.15 | 1.00 | | 0.34 | 1.00 | |
| Satd. Flow (perm) | 710 | 1600 | 1373 | 838 | 1778 | | 246 | 3016 | | 544 | 3001 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 141 | 259 | 137 | 89 | 210 | 67 | 106 | 514 | 69 | 98 | 819 | 122 |
| RTOR Reduction (vph) | 0 | 0 | 92 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 141 | 259 | 45 | 89 | 265 | 0 | 106 | 571 | 0 | 98 | 928 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 330 | 542 | 450 | 331 | 553 | | 171 | 1150 | | 279 | 1145 | |
| v/s Ratio Prot | c0.03 | c0.16 | | 0.01 | 0.15 | | c0.03 | 0.19 | | 0.02 | c0.31 | |
| v/s Ratio Perm | 0.14 | | 0.03 | 0.08 | | | 0.23 | | | 0.13 | | |
| v/c Ratio | 0.43 | 0.48 | 0.10 | 0.27 | 0.48 | | 0.62 | 0.50 | | 0.35 | 0.81 | |
| Uniform Delay, d1 | 19.0 | 23.3 | 20.9 | 20.1 | 24.9 | | 18.1 | 21.1 | | 16.4 | 24.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 3.0 | 0.4 | 0.4 | 2.9 | | 6.5 | 1.5 | | 0.8 | 6.3 | |
| Delay (s) | 19.9 | 26.3 | 21.3 | 20.6 | 27.9 | | 24.7 | 22.6 | | 17.1 | 31.0 | |
| Level of Service | B | C | C | C | C | | C | C | | B | C | |
| Approach Delay (s) | | 23.4 | | | 26.1 | | | 23.0 | | | 29.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 72.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↕ | | | ↕ | |
| Volume (vph) | 38 | 305 | 59 | 13 | 288 | 21 | 36 | 57 | 19 | 20 | 88 | 67 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1968 | 1467 | | 1629 | 1381 | | 1892 | | | 1870 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.98 | 1.00 | | 0.89 | | | 0.97 | |
| Satd. Flow (perm) | | 1870 | 1467 | | 1605 | 1381 | | 1716 | | | 1827 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 321 | 62 | 14 | 303 | 22 | 38 | 60 | 20 | 21 | 93 | 71 |
| RTOR Reduction (vph) | 0 | 0 | 31 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 0 | 361 | 31 | 0 | 317 | 11 | 0 | 107 | 0 | 0 | 151 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 921 | 722 | | 790 | 680 | | 713 | | | 759 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.19 | 0.02 | | 0.20 | 0.01 | | 0.06 | | | 0.08 | |
| v/c Ratio | | 0.39 | 0.04 | | 0.40 | 0.02 | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | | 10.4 | 8.6 | | 10.4 | 8.4 | | 11.8 | | | 12.1 | |
| Progression Factor | | 1.00 | 1.00 | | 1.95 | 2.83 | | 1.00 | | | 1.96 | |
| Incremental Delay, d2 | | 1.3 | 0.1 | | 1.5 | 0.0 | | 0.4 | | | 0.6 | |
| Delay (s) | | 11.6 | 8.7 | | 21.8 | 24.0 | | 12.3 | | | 24.3 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 11.2 | | | 22.0 | | | 12.3 | | | 24.3 | |
| Approach LOS | | B | | | C | | | B | | | C | |

Intersection Summary


| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 17.0 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.31 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 59.9% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 58 | 189 | 40 | 11 | 206 | 10 | 34 | 108 | 18 | 14 | 175 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1748 | 1443 | | 1728 | 1487 | | 1713 | 1489 | | 1712 | |
| Flt Permitted | | 0.88 | 1.00 | | 0.98 | 1.00 | | 0.90 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1555 | 1443 | | 1701 | 1487 | | 1555 | 1489 | | 1690 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 60 | 197 | 42 | 11 | 215 | 10 | 35 | 112 | 19 | 15 | 182 | 69 |
| RTOR Reduction (vph) | 0 | 0 | 27 | 0 | 0 | 6 | 0 | 0 | 10 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 257 | 15 | 0 | 226 | 4 | 0 | 147 | 9 | 0 | 247 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 550 | 511 | | 602 | 526 | | 766 | 733 | | 832 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | 0.09 | 0.01 | | c0.15 | |
| v/c Ratio | | 0.47 | 0.03 | | 0.38 | 0.01 | | 0.19 | 0.01 | | 0.30 | |
| Uniform Delay, d1 | | 16.3 | 13.7 | | 15.6 | 13.6 | | 9.3 | 8.4 | | 9.8 | |
| Progression Factor | | 1.93 | 3.45 | | 0.96 | 0.97 | | 0.20 | 0.25 | | 1.02 | |
| Incremental Delay, d2 | | 2.7 | 0.1 | | 1.7 | 0.0 | | 0.4 | 0.0 | | 0.9 | |
| Delay (s) | | 34.0 | 47.4 | | 16.7 | 13.1 | | 2.2 | 2.1 | | 10.9 | |
| Level of Service | | C | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 35.9 | | | 16.6 | | | 2.2 | | | 10.9 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 61.2% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 147 | 35 | 76 | 8 | 14 | 9 | 38 | 224 | 8 | 20 | 458 | 194 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1871 | 1440 | | 1776 | | | 1993 | | | 1976 | 1382 |
| Flt Permitted | | 0.78 | 1.00 | | 0.94 | | | 0.91 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1509 | 1440 | | 1693 | | | 1820 | | | 1948 | 1382 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 155 | 37 | 80 | 8 | 15 | 9 | 40 | 236 | 8 | 21 | 482 | 204 |
| RTOR Reduction (vph) | 0 | 0 | 47 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 90 |
| Lane Group Flow (vph) | 0 | 192 | 33 | 0 | 25 | 0 | 0 | 282 | 0 | 0 | 503 | 114 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 671 | 598 | | 443 | | | 896 | | | 959 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | 0.02 | | 0.01 | | | 0.16 | | | c0.26 | 0.08 |
| v/c Ratio | | 0.29 | 0.06 | | 0.06 | | | 0.32 | | | 0.52 | 0.17 |
| Uniform Delay, d1 | | 12.6 | 11.4 | | 18.0 | | | 9.9 | | | 11.3 | 9.1 |
| Progression Factor | | 0.63 | 0.77 | | 1.00 | | | 0.61 | | | 0.62 | 0.22 |
| Incremental Delay, d2 | | 1.0 | 0.2 | | 0.2 | | | 0.8 | | | 1.6 | 0.4 |
| Delay (s) | | 8.9 | 8.9 | | 18.2 | | | 6.9 | | | 8.6 | 2.5 |
| Level of Service | | A | A | | B | | | A | | | A | A |
| Approach Delay (s) | | 8.9 | | | 18.2 | | | 6.9 | | | 6.9 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.6 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 69.1% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|-------|------|----------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 866 | 289 | 324 | 935 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4569 | | 1620 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.14 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4569 | | 242 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 884 | 295 | 331 | 954 | 0 | 0 | 0 | 0 | 523 | 290 | 341 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 111 |
| Lane Group Flow (vph) | 0 | 1135 | 0 | 331 | 954 | 0 | 0 | 0 | 0 | 298 | 584 | 152 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 47.8 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Effective Green, g (s) | | 47.8 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Actuated g/C Ratio | | 0.42 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1899 | | 433 | 2171 | | | | | 360 | 704 | 349 |
| v/s Ratio Prot | | 0.25 | | 0.15 | 0.29 | | | | | | | |
| v/s Ratio Perm | | | | 0.35 | | | | | | 0.20 | 0.20 | 0.11 |
| v/c Ratio | | 0.60 | | 0.76 | 0.44 | | | | | 0.83 | 0.83 | 0.44 |
| Uniform Delay, d1 | | 26.1 | | 21.5 | 9.7 | | | | | 41.3 | 41.4 | 37.0 |
| Progression Factor | | 1.00 | | 1.09 | 1.51 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.4 | | 6.0 | 0.5 | | | | | 14.8 | 8.2 | 1.0 |
| Delay (s) | | 27.5 | | 29.5 | 15.1 | | | | | 56.1 | 49.6 | 38.0 |
| Level of Service | | C | | C | B | | | | | E | D | D |
| Approach Delay (s) | | 27.5 | | | 18.8 | | | 0.0 | | | 48.6 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 98.4% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1038 | 0 | 0 | 852 | 269 | 406 | 333 | 292 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4526 | | | | |
| Flt Permitted | 0.20 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 647 | 3353 | | | 3241 | 1489 | | 4526 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1093 | 0 | 0 | 897 | 283 | 427 | 351 | 307 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 99 | 0 | 59 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1093 | 0 | 0 | 897 | 184 | 0 | 1026 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 70.0 | 70.0 | | | 52.2 | 52.2 | | 33.0 | | | | |
| Effective Green, g (s) | 70.0 | 70.0 | | | 52.2 | 52.2 | | 33.0 | | | | |
| Actuated g/C Ratio | 0.61 | 0.61 | | | 0.45 | 0.45 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 650 | 2041 | | | 1471 | 676 | | 1299 | | | | |
| v/s Ratio Prot | 0.06 | c0.33 | | | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.28 | | | | | 0.12 | | 0.23 | | | | |
| v/c Ratio | 0.55 | 0.54 | | | 0.61 | 0.27 | | 0.79 | | | | |
| Uniform Delay, d1 | 13.2 | 13.1 | | | 23.7 | 19.6 | | 37.8 | | | | |
| Progression Factor | 0.48 | 0.30 | | | 0.97 | 1.10 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.8 | 0.8 | | | 1.6 | 0.8 | | 3.8 | | | | |
| Delay (s) | 7.2 | 4.6 | | | 24.5 | 22.3 | | 41.6 | | | | |
| Level of Service | A | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 5.3 | | | 24.0 | | | 41.6 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.8 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 98.4% | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 132 | 619 | 399 | 102 | 612 | 52 | 227 | 179 | 66 | 74 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1564 | 3273 | 1313 | 1600 | 3283 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.19 | 1.00 | 1.00 | 0.40 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 308 | 3273 | 1313 | 681 | 3283 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 139 | 652 | 420 | 107 | 644 | 55 | 239 | 188 | 69 | 78 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 169 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 139 | 652 | 251 | 107 | 693 | 0 | 239 | 219 | 0 | 78 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 65.0 | 52.5 | 68.8 | 41.7 | 32.7 | | 38.0 | 26.6 | | 26.1 | 18.2 | |
| Effective Green, g (s) | 65.0 | 52.5 | 68.8 | 41.7 | 32.7 | | 38.0 | 26.6 | | 26.1 | 18.2 | |
| Actuated g/C Ratio | 0.57 | 0.46 | 0.60 | 0.36 | 0.28 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 489 | 1494 | 786 | 319 | 934 | | 347 | 694 | | 258 | 465 | |
| v/s Ratio Prot | 0.07 | c0.20 | 0.05 | c0.03 | c0.21 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.09 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.28 | 0.44 | 0.32 | 0.34 | 0.74 | | 0.69 | 0.32 | | 0.30 | 0.41 | |
| Uniform Delay, d1 | 13.9 | 21.2 | 11.5 | 25.0 | 37.3 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.67 | 0.82 | 2.95 | 1.00 | 1.00 | | 0.85 | 0.93 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.2 | 0.8 | 0.2 | 0.6 | 5.3 | | 5.4 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 10.5 | 18.3 | 34.1 | 25.7 | 42.6 | | 31.6 | 34.9 | | 36.9 | 45.7 | |
| Level of Service | B | B | C | C | D | | C | C | | D | D | |
| Approach Delay (s) | | 22.9 | | | 40.4 | | | 33.3 | | | 43.8 | |
| Approach LOS | | C | | | D | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 70.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 193 | 367 | 68 | 202 | 107 | 362 | 340 | 78 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 2894 | | 1653 | 3184 | | 1620 | 3407 | | 1580 | 3183 | |
| Flt Permitted | 0.54 | 1.00 | | 0.29 | 1.00 | | 0.32 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 961 | 2894 | | 504 | 3184 | | 544 | 3407 | | 826 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 203 | 386 | 72 | 213 | 113 | 381 | 358 | 82 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 269 | 0 | 0 | 56 | 0 | 0 | 17 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 320 | 0 | 72 | 270 | 0 | 381 | 423 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 41.7 | 35.0 | | 43.9 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 41.7 | 35.0 | | 43.9 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.36 | 0.30 | | 0.38 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 392 | 881 | | 270 | 999 | | 454 | 1309 | | 340 | 888 | |
| v/s Ratio Prot | 0.01 | c0.11 | | c0.02 | 0.08 | | c0.15 | 0.12 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | 0.08 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.12 | 0.36 | | 0.27 | 0.27 | | 0.84 | 0.32 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 24.0 | 31.3 | | 23.6 | 29.6 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Incremental Delay, d2 | 0.2 | 1.2 | | 0.6 | 0.7 | | 13.1 | 0.7 | | 3.9 | 2.2 | |
| Delay (s) | 24.2 | 32.5 | | 24.3 | 30.2 | | 33.9 | 25.5 | | 32.6 | 36.5 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 31.8 | | | 29.2 | | | 29.4 | | | 35.3 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.6 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | | | 74.0% | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 101 | 578 | 135 | 10 | 376 | 66 | 102 | 281 | 9 | 188 | 578 | 174 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3029 | | | 3035 | | 1451 | 3227 | | 1522 | 2872 | |
| Flt Permitted | | 0.72 | | | 0.93 | | 0.23 | 1.00 | | 0.57 | 1.00 | |
| Satd. Flow (perm) | | 2209 | | | 2826 | | 351 | 3227 | | 906 | 2872 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 106 | 608 | 142 | 11 | 396 | 69 | 107 | 296 | 9 | 198 | 608 | 183 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 831 | 0 | 0 | 455 | 0 | 107 | 302 | 0 | 198 | 747 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 900 | | | 739 | | 219 | 1192 | | 428 | 1060 | |
| v/s Ratio Prot | | c0.06 | | | | | c0.03 | 0.09 | | 0.03 | c0.26 | |
| v/s Ratio Perm | | c0.30 | | | 0.16 | | 0.18 | | | 0.17 | | |
| v/c Ratio | | 0.92 | | | 0.62 | | 0.49 | 0.25 | | 0.46 | 0.71 | |
| Uniform Delay, d1 | | 19.1 | | | 21.1 | | 12.0 | 14.3 | | 12.2 | 17.5 | |
| Progression Factor | | 1.00 | | | 1.51 | | 0.95 | 0.59 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 16.3 | | | 1.0 | | 7.3 | 0.5 | | 3.6 | 3.9 | |
| Delay (s) | | 35.4 | | | 33.0 | | 18.8 | 9.0 | | 15.8 | 21.4 | |
| Level of Service | | D | | | C | | B | A | | B | C | |
| Approach Delay (s) | | 35.4 | | | 33.0 | | | 11.5 | | | 20.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 25.9 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.78 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | | |
| Intersection Capacity Utilization | | 80.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 198 | 136 | 103 | 159 | 27 | 70 | 450 | 78 | 33 | 662 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 1885 | | 1599 | 1992 | | 1676 | 3221 | | 1435 | 3274 | |
| Flt Permitted | 0.64 | 1.00 | | 0.44 | 1.00 | | 0.31 | 1.00 | | 0.42 | 1.00 | |
| Satd. Flow (perm) | 1141 | 1885 | | 736 | 1992 | | 538 | 3221 | | 636 | 3274 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 71 | 208 | 143 | 108 | 167 | 28 | 74 | 474 | 82 | 35 | 697 | 69 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 9 | 0 | 0 | 21 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 71 | 313 | 0 | 108 | 186 | 0 | 74 | 535 | 0 | 35 | 754 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 421 | 696 | | 272 | 736 | | 257 | 1536 | | 303 | 1561 | |
| v/s Ratio Prot | | c0.17 | | | 0.09 | | | 0.17 | | | c0.23 | |
| v/s Ratio Perm | 0.06 | | | 0.15 | | | 0.14 | | | 0.06 | | |
| v/c Ratio | 0.17 | 0.45 | | 0.40 | 0.25 | | 0.29 | 0.35 | | 0.12 | 0.48 | |
| Uniform Delay, d1 | 13.8 | 15.5 | | 15.2 | 14.3 | | 10.3 | 10.7 | | 9.4 | 11.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.31 | 1.33 | | 1.00 | 1.00 | | 1.07 | 0.88 | |
| Incremental Delay, d2 | 0.9 | 2.1 | | 2.6 | 0.5 | | 2.8 | 0.6 | | 0.5 | 0.7 | |
| Delay (s) | 14.7 | 17.6 | | 22.5 | 19.4 | | 13.1 | 11.3 | | 10.6 | 10.9 | |
| Level of Service | B | B | | C | B | | B | B | | B | B | |
| Approach Delay (s) | | 17.1 | | | 20.5 | | | 11.5 | | | 10.9 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 68.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 750 | 221 | 534 | 18 | 3 | 10 | 9 | 46 | 9 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.94 | |
| Flt Protected | | 1.00 | | 0.99 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3090 | | | | 1811 | | | 1824 | |
| Flt Permitted | | 0.95 | | 0.56 | | | | 0.96 | | | 0.89 | |
| Satd. Flow (perm) | | 3012 | | 1746 | | | | 1750 | | | 1672 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 789 | 233 | 562 | 19 | 3 | 11 | 9 | 48 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 791 | 0 | 812 | 0 | 0 | 0 | 33 | 0 | 0 | 13 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 834 | | 849 | | | | 377 | | | 360 | |
| v/s Ratio Prot | | | | c0.09 | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | c0.31 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 0.95 | | 1.11dl | | | | 0.09 | | | 0.04 | |
| Uniform Delay, d1 | | 23.0 | | 18.4 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.45 | | 0.89 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 14.0 | | 21.2 | | | | 0.5 | | | 0.2 | |
| Delay (s) | | 47.5 | | 37.7 | | | | 20.9 | | | 20.4 | |
| Level of Service | | D | | D | | | | C | | | C | |
| Approach Delay (s) | | 47.5 | | 37.7 | | | | 20.9 | | | 20.4 | |
| Approach LOS | | D | | D | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.3 | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 90.1% | | ICU Level of Service | | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

No Build (2026) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

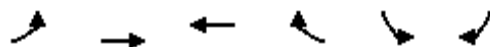


| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 242 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 255 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 258 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.17 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.07 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.87 | |
| Incremental Delay, d2 | | 77.3 | |
| Delay (s) | | 101.2 | |
| Level of Service | | F | |
| Approach Delay (s) | | 101.2 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 256 | 769 | 557 | 62 | 91 | 222 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3279 | 3271 | | 1660 | 1485 |
| Flt Permitted | | 0.65 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2168 | 3271 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 269 | 809 | 586 | 65 | 96 | 234 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 173 |
| Lane Group Flow (vph) | 0 | 1078 | 638 | 0 | 96 | 61 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1334 | 2013 | | 434 | 388 |
| v/s Ratio Prot | | | 0.20 | | c0.06 | |
| v/s Ratio Perm | | c0.50 | | | | 0.04 |
| v/c Ratio | | 0.81 | 0.32 | | 0.22 | 0.16 |
| Uniform Delay, d1 | | 9.6 | 6.0 | | 18.8 | 18.5 |
| Progression Factor | | 1.22 | 1.24 | | 1.27 | 2.35 |
| Incremental Delay, d2 | | 1.9 | 0.4 | | 1.2 | 0.9 |
| Delay (s) | | 13.6 | 7.8 | | 25.1 | 44.3 |
| Level of Service | | B | A | | C | D |
| Approach Delay (s) | | 13.6 | 7.8 | | 38.7 | |
| Approach LOS | | B | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 15.8 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.63 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 63.9% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 79 | 784 | 535 | 148 | 259 | 86 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3118 | 3069 | | 1506 | 1343 |
| Flt Permitted | | 0.82 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2578 | 3069 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 83 | 825 | 563 | 156 | 273 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 39 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 908 | 680 | 0 | 273 | 32 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1348 | 1605 | | 533 | 475 |
| v/s Ratio Prot | | | 0.22 | | c0.18 | |
| v/s Ratio Perm | | c0.35 | | | | 0.02 |
| v/c Ratio | | 0.67 | 0.42 | | 0.51 | 0.07 |
| Uniform Delay, d1 | | 11.4 | 9.5 | | 16.6 | 13.9 |
| Progression Factor | | 1.05 | 1.09 | | 1.64 | 3.32 |
| Incremental Delay, d2 | | 1.8 | 0.7 | | 3.2 | 0.2 |
| Delay (s) | | 13.8 | 11.1 | | 30.4 | 46.4 |
| Level of Service | | B | B | | C | D |
| Approach Delay (s) | | 13.8 | 11.1 | | 34.4 | |
| Approach LOS | | B | B | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 16.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.61 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 71.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 649 | 251 | 117 | 570 | 195 | 55 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.96 | | 1.00 | 1.00 | 0.97 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2387 | | 1788 | 2506 | 1748 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2387 | | 243 | 2506 | 1748 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 683 | 264 | 123 | 600 | 205 | 58 |
| RTOR Reduction (vph) | 21 | 0 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 926 | 0 | 123 | 600 | 247 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1138 | | 116 | 1195 | 645 | |
| v/s Ratio Prot | 0.39 | | | 0.24 | c0.14 | |
| v/s Ratio Perm | | | c0.51 | | | |
| v/c Ratio | 0.81 | | 1.06 | 0.50 | 0.38 | |
| Uniform Delay, d1 | 14.5 | | 17.0 | 11.7 | 15.1 | |
| Progression Factor | 1.33 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.0 | | 100.7 | 1.5 | 1.7 | |
| Delay (s) | 24.4 | | 117.7 | 13.2 | 16.8 | |
| Level of Service | C | | F | B | B | |
| Approach Delay (s) | 24.4 | | | 31.0 | 16.8 | |
| Approach LOS | C | | | C | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 25.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.77 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 75.2% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 957 | 37 | 108 | 678 | 1 | 59 | 0 | 149 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.38 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 759 | 3431 | 1479 | 380 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 1 | 997 | 39 | 112 | 706 | 1 | 61 | 0 | 155 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 139 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 997 | 25 | 112 | 706 | 1 | 0 | 61 | 16 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 53.7 | 53.7 | 53.7 | 68.1 | 68.1 | 68.1 | | 8.9 | 8.9 | | | |
| Effective Green, g (s) | 53.7 | 53.7 | 53.7 | 68.1 | 68.1 | 68.1 | | 8.9 | 8.9 | | | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.80 | 0.80 | 0.80 | | 0.10 | 0.10 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 480 | 2168 | 934 | 467 | 2660 | 1226 | | 162 | 157 | | | |
| v/s Ratio Prot | | c0.29 | | 0.03 | c0.21 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.16 | | 0.00 | | c0.04 | 0.01 | | | |
| v/c Ratio | 0.00 | 0.46 | 0.03 | 0.24 | 0.27 | 0.00 | | 0.38 | 0.10 | | | |
| Uniform Delay, d1 | 5.8 | 8.1 | 5.9 | 2.9 | 2.1 | 1.7 | | 35.5 | 34.4 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 0.7 | 0.1 | 0.3 | 0.1 | 0.0 | | 1.5 | 0.3 | | | |
| Delay (s) | 5.8 | 8.8 | 5.9 | 3.2 | 2.2 | 1.7 | | 36.9 | 34.7 | | | |
| Level of Service | A | A | A | A | A | A | | D | C | | | |
| Approach Delay (s) | | 8.7 | | | 2.3 | | | 35.4 | | | 0.0 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 49.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 9 | 918 | 807 | 29 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3098 | 3083 | | 1532 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2929 | 3083 | | 1532 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 9 | 966 | 849 | 31 | 75 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 975 | 877 | 0 | 82 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1074 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.28 | | c0.05 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.91 | 0.40 | | 0.69 | |
| Uniform Delay, d1 | | 27.1 | 5.2 | | 40.4 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 12.6 | 0.3 | | 27.6 | |
| Delay (s) | | 39.7 | 0.3 | | 68.1 | |
| Level of Service | | D | A | | E | |
| Approach Delay (s) | | 39.7 | 0.3 | | 68.1 | |
| Approach LOS | | D | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 23.2 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.69 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 45.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

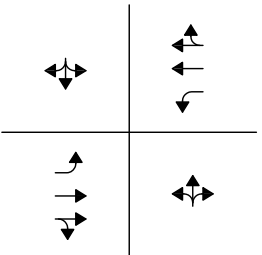
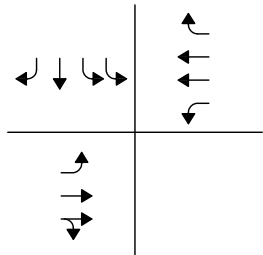
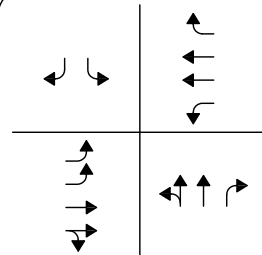
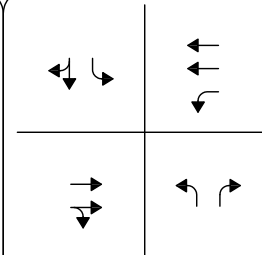
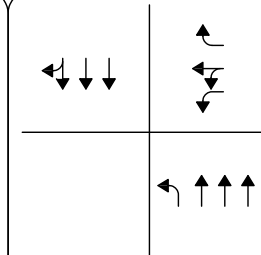
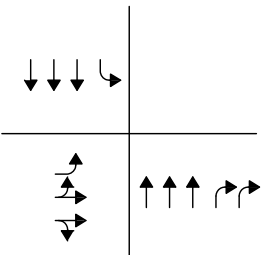
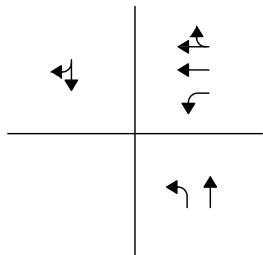
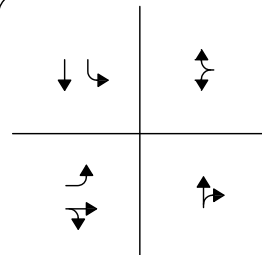
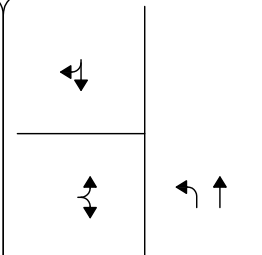
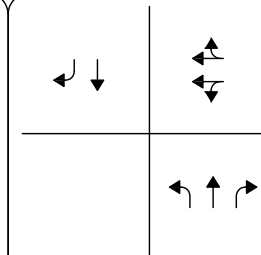
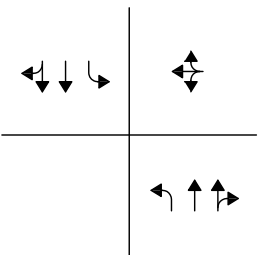
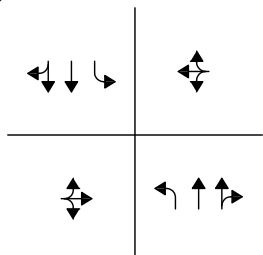
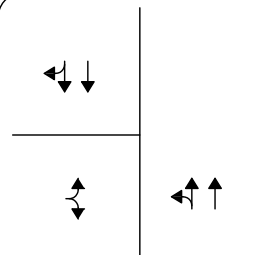
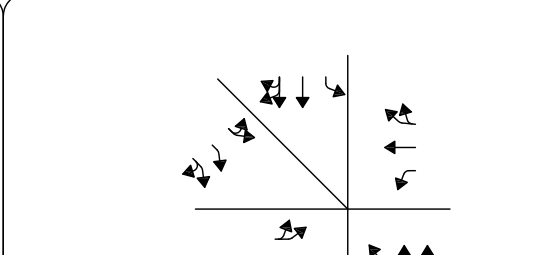
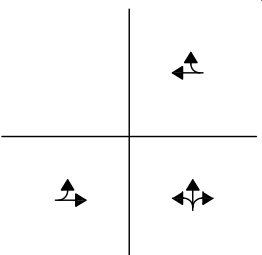
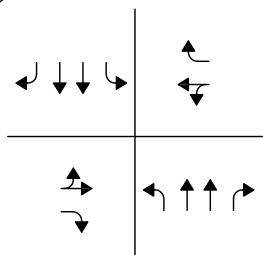
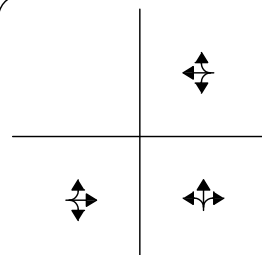
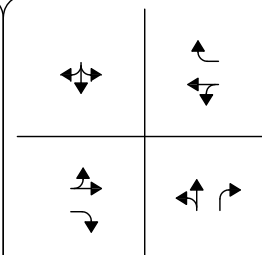
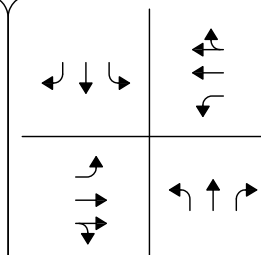
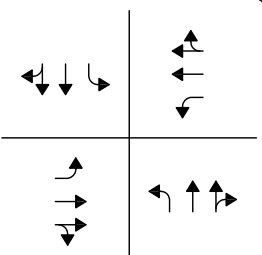
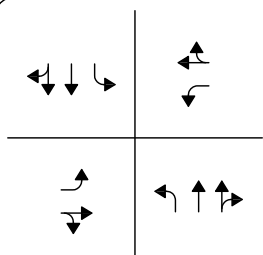
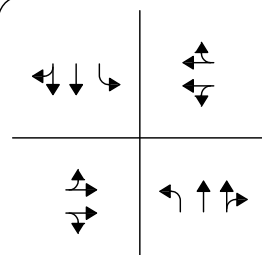
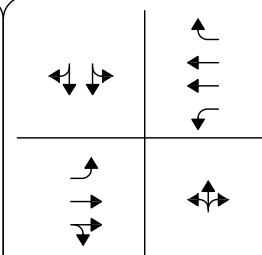
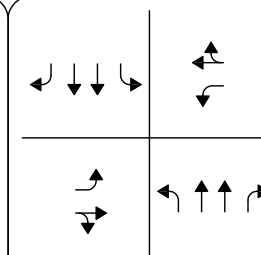
HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 38 | 476 | 0 | 1 | 559 | 38 | 3 | 2 | 28 | 192 | 0 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1774 | | | 3340 | | | 1467 | | | 1669 | 1348 |
| Flt Permitted | | 0.92 | | | 0.95 | | | 0.97 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1643 | | | 3190 | | | 1432 | | | 1568 | 1348 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 501 | 0 | 1 | 588 | 40 | 3 | 2 | 29 | 202 | 0 | 133 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 26 | 0 | 0 | 0 | 89 |
| Lane Group Flow (vph) | 0 | 541 | 0 | 0 | 623 | 0 | 0 | 8 | 0 | 0 | 202 | 44 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 599 | | | 1714 | | | 152 | | | 480 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.33 | | | 0.13 | | | 0.01 | | | c0.04 | 0.03 |
| v/c Ratio | | 0.90 | | | 0.36 | | | 0.05 | | | 0.42 | 0.10 |
| Uniform Delay, d1 | | 25.6 | | | 11.7 | | | 34.2 | | | 24.2 | 19.8 |
| Progression Factor | | 1.00 | | | 1.11 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 19.4 | | | 0.2 | | | 0.7 | | | 2.7 | 0.4 |
| Delay (s) | | 45.0 | | | 13.1 | | | 34.8 | | | 26.9 | 20.2 |
| Level of Service | | D | | | B | | | C | | | C | C |
| Approach Delay (s) | | 45.0 | | | 13.1 | | | 34.8 | | | 24.2 | |
| Approach LOS | | D | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 74.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

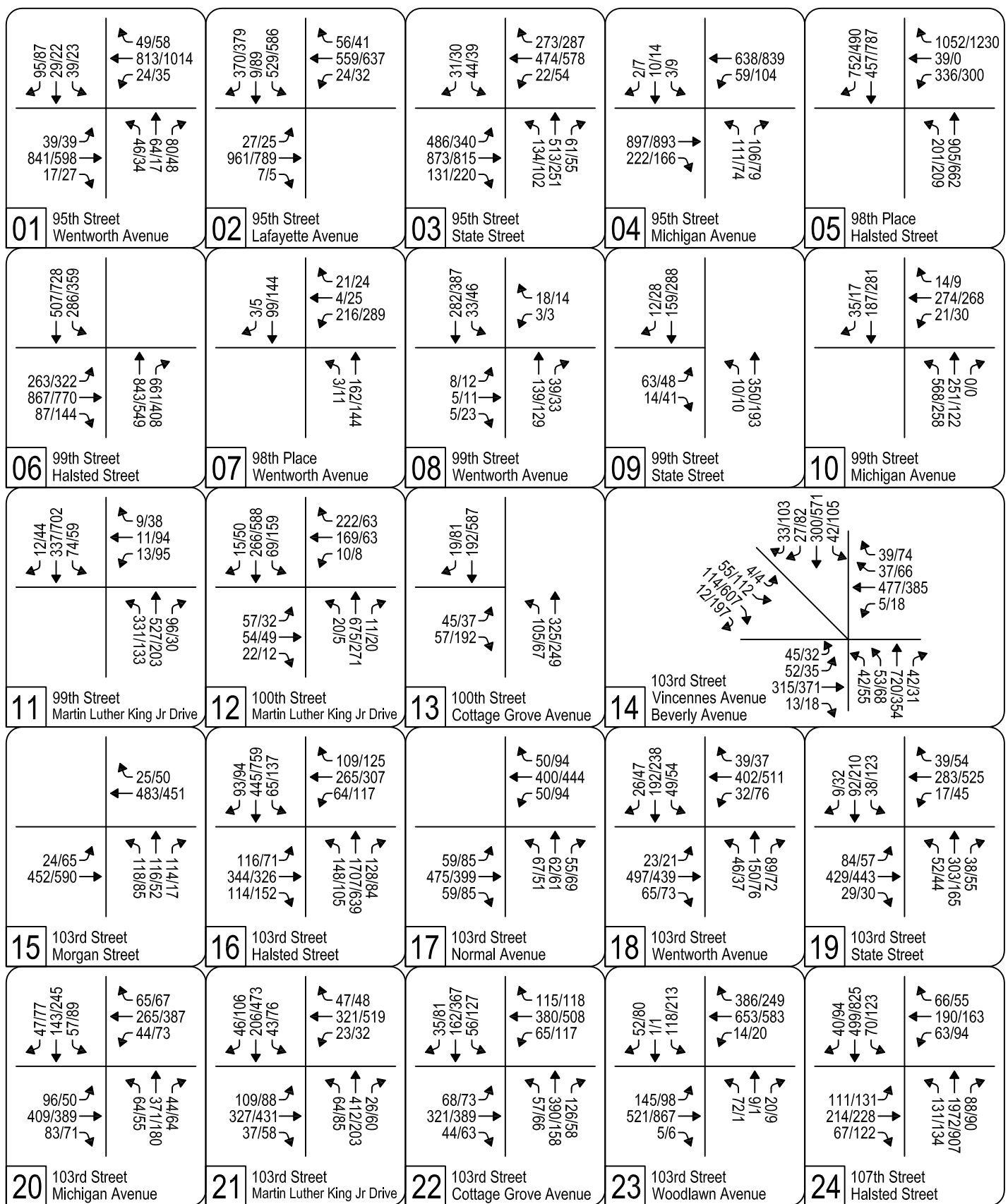
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|---|---|---|--|---|
|  |  |  |  |  |
| 01 95th Street Wentworth Avenue | 02 95th Street Lafayette Avenue | 03 95th Street State Street | 04 95th Street Michigan Avenue | 05 98th Place Halsted Street |
|  |  |  |  |  |
| 06 99th Street Halsted Street | 07 98th Place Wentworth Avenue | 08 99th Street Wentworth Avenue | 09 99th Street State Street | 10 99th Street Michigan Avenue |
|  |  |  |  | |
| 11 99th Street Martin Luther King Jr Drive | 12 100th Street Martin Luther King Jr Drive | 13 100th Street Cottage Grove Avenue | 14 103rd Street Vincennes Avenue Beverly Avenue | |
|  |  |  |  |  |
| 15 103rd Street Morgan Street | 16 103rd Street Halsted Street | 17 103rd Street Normal Avenue | 18 103rd Street Wentworth Avenue | 19 103rd Street State Street |
|  |  |  |  |  |
| 20 103rd Street Michigan Avenue | 21 103rd Street Martin Luther King Jr Drive | 22 103rd Street Cottage Grove Avenue | 23 103rd Street Woodlawn Avenue | 24 107th Street Halsted Street |

No Build (2030) Intersection Lane Geometry

Page 1 of 3

| | | | | |
|---|--|--|---|--|
| | | | | |
| 25 107th Street Wentworth Avenue | 26 107th Street State Street | 27 107th Street Michigan Avenue | 28 107th Street Martin Luther King Jr Drive | 29 107th Street Cottage Grove Avenue |
| | | | | |
| 30 111th Street Marshfield Avenue | 31 111th Street Hamlet Avenue | 32 112th Place Marshfield Avenue | 33 112th Place Hamlet Avenue | 34 111th Street Halsted Street |
| | | | | |
| 35 111th Street Normal Avenue | 36 111th Street Wentworth Avenue | 37 111th Street State Street | 38 111th Street Michigan Avenue | 39 111th Street Indiana Avenue |
| | | | | |
| 40 111th Street Martin Luther King Jr Drive | 41 111th Street Cottage Grove Avenue | 42 111th Street Ellis Avenue | 43 111th Street Doty Road | 44 111th Street I-94 Eastbound Ramps |
| | | | | |
| 45 111th Street I-94 Westbound Ramps | 46 115th Street Marshfield Avenue | 47 115th Street Ashland Avenue | 48 115th Street Racine Road | 49 115th Street Halsted Street |

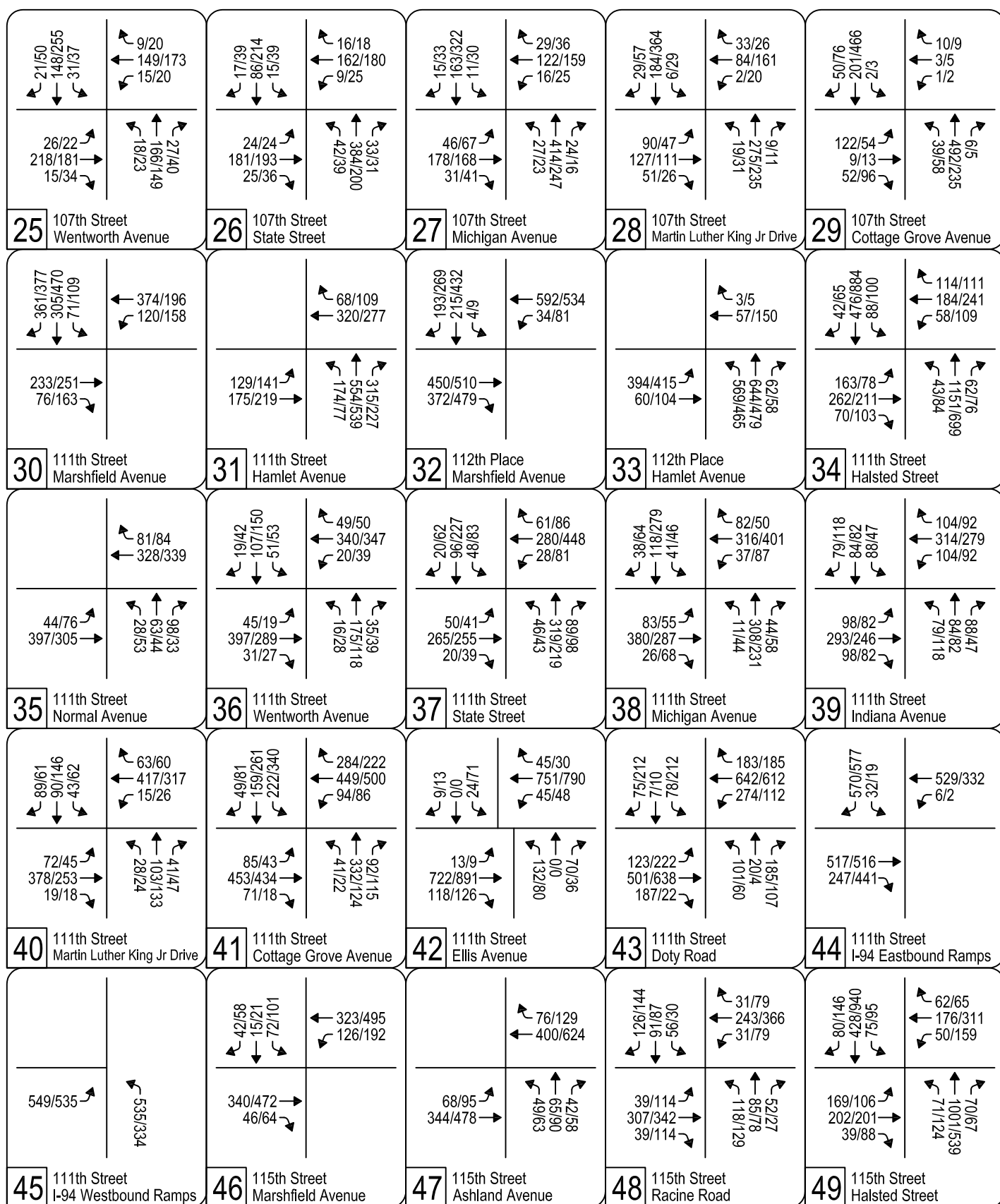
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|--|---|--|--|--|--|--|---|--|---|
| | 50 111th Street Wentworth Avenue | | 51 115th Street State Street | | 52 115th Street Michigan Avenue | | 53 115th Street Indiana Avenue | | 54 115th Street Martin Luther King Jr Drive |
| | 55 115th Street Cottage Grove Avenue | | 56 115th Street I-94 Eastbound Ramps | | 57 115th Street I-94 Westbound Ramps | | 58 119th Street Marshfield Avenue | | 59 119th Street Ashland Avenue |
| | 60 119th Street Halsted Street | | 61 119th Street Wentworth Avenue | | 62 119th Street State Street | | 63 119th Street Michigan Avenue | | 64 127th Street Paulina Street |
| | 65 127th Street Marshfield Avenue | | 66 127th Street Ashland Avenue | | 67 Vermont Street Ashland Avenue | | 68 127th Street Halsted Street | | 69 Vermont Street Halsted Street |
| | 70 127th Street/Vermont Street/Wallace Street | | 71 127th Street State Street | | 72 127th Street Michigan Avenue | | 73 130th Street Indiana Avenue | | 74 130th Street Ellis Avenue |



No Build (2030) Intersection Traffic Volumes

Page 1 of 3

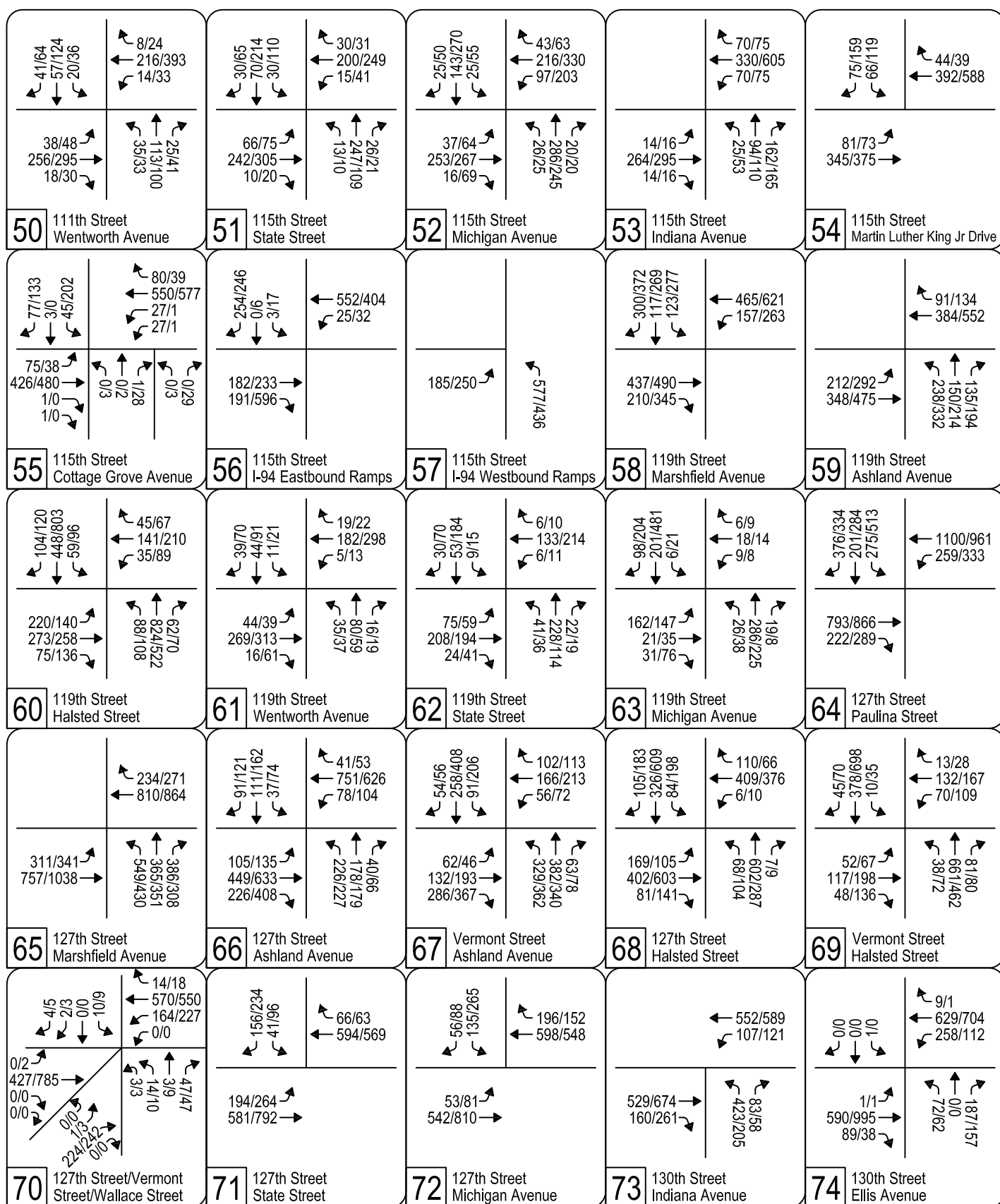
Legend: AM/PM Peak Hour Volumes



No Build (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



No Build (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 17 | 24 | 813 | 49 | 46 | 64 | 80 | 39 | 29 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.92 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1752 | | | 1663 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 369 | 2976 | | 418 | 2979 | | | 1596 | | | 1514 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 18 | 25 | 856 | 52 | 48 | 67 | 84 | 41 | 31 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 41 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 901 | 0 | 25 | 901 | 0 | 0 | 158 | 0 | 0 | 113 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 219 | 1558 | | | 565 | | | 536 | |
| v/s Ratio Prot | | c0.30 | | | 0.30 | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.07 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.28 | | | 0.21 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.2 | | | 0.9 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.7 | | | 16.3 | | | 15.6 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.1 | | | 13.5 | | | 16.3 | | | 15.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 56 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 59 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 33 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.12 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.4 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.63 | 1.53 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.5 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.4 | 48.8 | | 4.5 | 10.0 | 20.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.2 | | | 10.7 | | 0.0 | | | | 55.4 | |
| Approach LOS | | D | | | B | | A | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 474 | 273 | 134 | 513 | 61 | 44 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 499 | 287 | 141 | 540 | 64 | 46 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 512 | 1049 | 0 | 23 | 499 | 129 | 0 | 681 | 39 | 46 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.17 | | | c0.21 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.49 | 0.67 | | 0.21 | 0.72 | 0.57 | | 0.89 | 0.12 | 0.87 | | 0.05 |
| Uniform Delay, d1 | 34.7 | 24.5 | | 57.2 | 45.5 | 43.6 | | 48.5 | 39.5 | 60.5 | | 57.4 |
| Progression Factor | 0.75 | 0.20 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.89 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 6.2 | 10.1 | | 14.9 | 0.7 | 76.0 | | 0.4 |
| Delay (s) | 26.9 | 6.0 | | 61.6 | 51.7 | 53.8 | | 60.7 | 36.1 | 136.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.8 | | | 52.7 | | | 58.6 | | | 103.6 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.8 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 72.7% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 897 | 222 | 59 | 638 | 0 | 111 | 0 | 106 | 3 | 10 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1934 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 267 | 3005 | | 1096 | | 1465 | 1803 | 1934 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 247 | 66 | 709 | 0 | 123 | 0 | 118 | 3 | 11 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1222 | 0 | 66 | 709 | 0 | 123 | 0 | 41 | 3 | 12 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1716 | | 160 | 1803 | | 351 | | 469 | | 577 | 619 |
| v/s Ratio Prot | | c0.43 | | | 0.24 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.25 | | | c0.11 | | 0.03 | | 0.00 | |
| v/c Ratio | | 0.71 | | 0.41 | 0.39 | | 0.35 | | 0.09 | | 0.01 | 0.02 |
| Uniform Delay, d1 | | 14.0 | | 10.6 | 10.5 | | 26.0 | | 23.8 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.5 | | 7.7 | 0.6 | | 2.7 | | 0.4 | | 0.0 | 0.1 |
| Delay (s) | | 16.5 | | 18.3 | 11.1 | | 28.8 | | 24.2 | | 23.2 | 23.3 |
| Level of Service | | B | | B | B | | C | | C | | C | C |
| Approach Delay (s) | | 16.5 | | | 11.7 | | | 26.5 | | | | 23.3 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 60.6% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 336 | 39 | 1052 | 201 | 905 | 0 | 0 | 457 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3930 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3930 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 923 | 0 | 0 | 466 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 923 | 0 | 0 | 1233 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1160 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.31 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.76 | 0.08 | 2.54 | 0.43 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.6 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.6 | 0.3 | 698.4 | 2.0 | 0.2 | | | 44.9 | |
| Delay (s) | | | | 45.2 | 27.1 | 735.9 | 21.2 | 22.1 | | | 81.9 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.8 | | | 21.9 | | | 81.9 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.2 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 94.9% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 87 | 0 | 0 | 0 | 0 | 843 | 661 | 286 | 507 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3186 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 90 | 0 | 0 | 0 | 0 | 869 | 681 | 295 | 523 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1004 | 0 | 0 | 0 | 0 | 0 | 869 | 681 | 295 | 523 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | | | | Perm | Prot | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | 6 |
| Permitted Phases | 4 | | | | | | | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1032 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | 0.20 | | | c0.19 | | 0.11 |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | c0.31 | | | | |
| v/c Ratio | 0.50 | 0.97 | | | | | | 0.75 | 1.17 | 0.63 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.0 | | | | | | 35.2 | 38.5 | 32.1 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.44 | 0.46 | 1.06 | 0.44 | |
| Incremental Delay, d2 | 3.7 | 22.2 | | | | | | 0.4 | 77.5 | 2.4 | 0.1 | |
| Delay (s) | 32.4 | 57.3 | | | | | | 15.7 | 95.3 | 36.5 | 4.4 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | 52.4 | | | | | | 0.0 | 50.7 | | | 16.0 | |
| Approach LOS | D | | | | | | A | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.5 | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | Sum of lost time (s) | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 94.9% | | ICU Level of Service | | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 216 | 4 | 21 | 3 | 162 | 0 | 0 | 99 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1958 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.59 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 805 | 1882 | | | 1958 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 240 | 4 | 23 | 3 | 180 | 0 | 0 | 110 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 240 | 9 | 0 | 3 | 180 | 0 | 0 | 112 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | 513 | 1107 | | | 1060 | |
| v/s Ratio Prot | | | | | 0.00 | | 0.00 | c0.10 | | | 0.06 | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | 0.01 | 0.16 | | | 0.11 | |
| Uniform Delay, d1 | | | | 23.3 | 19.9 | | 9.7 | 8.0 | | | 9.5 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.04 | 1.19 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | 0.0 | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.6 | 19.9 | | 10.1 | 9.8 | | | 9.7 | |
| Level of Service | | | | C | B | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 25.9 | | | 9.8 | | | 9.7 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 8 | 5 | 5 | 3 | 0 | 18 | 0 | 139 | 39 | 33 | 282 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.88 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1578 | | | 1688 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.98 | | | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1809 | | | 1565 | | | 1688 | | 1019 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 3 | 0 | 19 | 0 | 146 | 41 | 35 | 297 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 9 | 0 | 0 | 175 | 0 | 35 | 297 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 575 | | | 497 | | | 794 | | 647 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.10 | | 0.00 | c0.17 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.02 | | | 0.22 | | 0.05 | 0.29 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 19.9 | | | 13.3 | | 8.4 | 8.7 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.92 | 0.84 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.6 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.0 | | | 13.9 | | 7.9 | 7.9 | |
| Level of Service | B | B | | | B | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.0 | | | 13.9 | | | 7.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.19 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 14 | 10 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1791 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1791 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 16 | 11 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 11 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 75 | 0 | 11 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 579 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.5 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.16 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.4 | 8.9 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.9 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 21 | 274 | 14 | 568 | 251 | 0 | 0 | 187 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3742 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.58 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3742 | | 1013 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 23 | 304 | 16 | 631 | 279 | 0 | 0 | 208 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 631 | 279 | 0 | 0 | 208 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1145 | | 684 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.92 | 0.27 | | | 0.29 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 16.9 | 8.1 | | | 14.9 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 19.9 | 0.6 | | | 1.0 | 0.1 |
| Delay (s) | | | | | 23.2 | | 36.8 | 8.7 | | | 16.0 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 28.2 | | | 15.5 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.0 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 62.7% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 13 | 11 | 9 | 331 | 527 | 96 | 74 | 337 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1796 | | 1692 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1796 | | 897 | 3237 | | 566 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 14 | 12 | 10 | 368 | 586 | 107 | 82 | 374 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 29 | 0 | 368 | 673 | 0 | 82 | 384 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 551 | | 565 | 1467 | | 416 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.05 | | 0.65 | 0.46 | | 0.20 | 0.25 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.7 | 14.2 | | 12.3 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.3 | 0.9 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 14.7 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 12.6 | | | 13.1 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 57 | 54 | 22 | 10 | 169 | 222 | 20 | 675 | 11 | 69 | 266 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1949 | | | 1627 | | 1596 | 3233 | | 1641 | 3131 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.57 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1618 | | 959 | 3233 | | 576 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 23 | 11 | 178 | 234 | 21 | 711 | 12 | 73 | 280 | 16 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 131 | 0 | 0 | 364 | 0 | 21 | 721 | 0 | 73 | 291 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 539 | | 537 | 1810 | | 323 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.09 | |
| v/s Ratio Perm | | 0.10 | | | c0.22 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.67 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.4 | | | 21.5 | | 7.4 | 9.3 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.17 | 0.06 | |
| Incremental Delay, d2 | | 1.6 | | | 6.6 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.1 | | 7.6 | 10.0 | | 3.0 | 0.7 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.1 | | | 9.9 | | | 1.1 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 69.5% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 325 | 192 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 361 | 213 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 237 | 241 | 142 | 92 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.08 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.35 | 0.34 | 0.21 | 0.13 | |
| Capacity (veh/h) | 629 | 654 | 684 | 641 | 660 | |
| Control Delay (s) | 9.3 | 10.1 | 9.6 | 8.7 | 7.8 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.3 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 315 | 13 | 5 | 477 | 37 | 39 | 42 | 53 | 720 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3292 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.55 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 992 | 1731 | 1487 | | | 700 | 3292 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 350 | 14 | 6 | 530 | 41 | 43 | 47 | 59 | 800 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 30 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 350 | 7 | 6 | 530 | 54 | 0 | 0 | 106 | 843 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 302 | 528 | 453 | | | 167 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.20 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.42 | 0.01 | 0.02 | 1.00 | 0.12 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.2 | 18.1 | 14.5 | 25.5 | 36.5 | 26.3 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.6 | 0.0 | 0.1 | 40.1 | 0.5 | | | 17.0 | 54.4 | |
| Delay (s) | | 24.1 | 19.7 | 14.5 | 25.7 | 76.6 | 26.9 | | | 52.9 | 94.4 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.5 | | | 69.4 | | | | | 89.8 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.3 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 78.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 42 | 300 | 27 | 33 | 4 | 55 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 47 | 333 | 30 | 37 | 4 | 61 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 47 | 392 | 0 | 0 | 0 | 65 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.16 | | | | | | c0.05 | |
| v/c Ratio | 0.69 | 0.51 | | | | 0.23 | 0.31 | |
| Uniform Delay, d1 | 36.8 | 35.1 | | | | 37.9 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 44.8 | 2.4 | | | | 1.9 | 1.8 | |
| Delay (s) | 81.6 | 37.5 | | | | 39.8 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 42.1 | | | | 40.1 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 452 | 0 | 0 | 483 | 25 | 118 | 116 | 114 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1772 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1594 | | | 1930 | | | 1772 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 502 | 0 | 0 | 537 | 28 | 131 | 129 | 127 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 529 | 0 | 0 | 565 | 0 | 0 | 387 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 760 | | | 920 | | | 709 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.70 | | | 0.61 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 13.3 | | | 12.6 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.2 | | | 3.1 | | | 3.0 | | | | |
| Delay (s) | | 18.5 | | | 15.6 | | | 18.0 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 18.5 | | | 15.6 | | | 18.0 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 344 | 114 | 64 | 265 | 109 | 148 | 1707 | 128 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1920 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.66 | 1.00 | | 0.63 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1278 | 1426 | | 1221 | 1396 | 625 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 362 | 120 | 67 | 279 | 115 | 156 | 1797 | 135 | 68 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 0 | 68 | 0 | 0 | 29 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 484 | 49 | 0 | 346 | 47 | 156 | 1797 | 106 | 68 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.51 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 523 | 584 | | 500 | 572 | 389 | 1310 | 543 | 147 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.38 | 0.03 | | 0.28 | 0.03 | 0.17 | | 0.08 | 0.19 | | 0.03 |
| v/c Ratio | | 0.93 | 0.08 | | 0.69 | 0.08 | 0.40 | 1.37 | 0.19 | 0.46 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 29.5 | 19.0 | | 25.5 | 18.9 | 14.7 | 30.3 | 19.1 | 23.1 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.09 | 0.77 | 0.42 |
| Incremental Delay, d2 | | 22.4 | 0.3 | | 7.7 | 0.3 | 0.7 | 172.2 | 0.8 | 2.2 | 0.9 | 0.3 |
| Delay (s) | | 51.8 | 19.2 | | 33.2 | 19.2 | 15.4 | 202.5 | 19.9 | 27.4 | 18.0 | 8.5 |
| Level of Service | | D | B | | C | B | B | F | B | C | B | A |
| Approach Delay (s) | | 45.4 | | | 29.7 | | | 176.7 | | | 17.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 111.2 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.10 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 111.3% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















No Build (2030) AM Peak
WRH

Synchro 7 - Report
Page 17

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 475 | 59 | 50 | 400 | 50 | 67 | 62 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1626 | | | 1777 | | | | |
| Flt Permitted | | 0.91 | | | 0.90 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1487 | | | 1472 | | | 1777 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 528 | 66 | 56 | 444 | 56 | 74 | 69 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 23 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 654 | 0 | 0 | 550 | 0 | 0 | 181 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 869 | | | 861 | | | 519 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.44 | | | 0.37 | | | 0.10 | | | | |
| v/c Ratio | | 0.75 | | | 0.64 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 10.0 | | | 8.9 | | | 18.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.0 | | | 3.6 | | | 1.8 | | | | |
| Delay (s) | | 16.0 | | | 12.6 | | | 20.0 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 16.0 | | | 12.6 | | | 20.0 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 23 | 497 | 65 | 32 | 402 | 39 | 46 | 150 | 89 | 49 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1634 | 1288 | | 1663 | 1490 | | 1776 | |
| Flt Permitted | | 0.97 | 1.00 | | 0.94 | 1.00 | | 0.89 | 1.00 | | 0.91 | |
| Satd. Flow (perm) | | 1616 | 1255 | | 1548 | 1288 | | 1497 | 1490 | | 1634 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 24 | 523 | 68 | 34 | 423 | 41 | 48 | 158 | 94 | 52 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 64 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 547 | 39 | 0 | 457 | 24 | 0 | 206 | 30 | 0 | 276 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 927 | 720 | | 888 | 738 | | 479 | 477 | | 523 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.03 | | 0.30 | 0.02 | | 0.14 | 0.02 | | c0.17 | |
| v/c Ratio | | 0.59 | 0.05 | | 0.51 | 0.03 | | 0.43 | 0.06 | | 0.53 | |
| Uniform Delay, d1 | | 10.3 | 7.0 | | 9.7 | 7.0 | | 20.1 | 17.7 | | 20.9 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.8 | 0.1 | | 2.1 | 0.1 | | 2.8 | 0.3 | | 3.8 | |
| Delay (s) | | 13.1 | 7.2 | | 11.8 | 7.0 | | 22.9 | 18.0 | | 24.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 12.4 | | | 11.4 | | | 21.4 | | | 24.6 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.57 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 89.2% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 429 | 29 | 17 | 283 | 39 | 52 | 303 | 38 | 38 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1463 | 2990 | | 1459 | 3528 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.54 | 1.00 | | 0.44 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 829 | 2990 | | 669 | 3528 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 477 | 32 | 19 | 314 | 43 | 58 | 337 | 42 | 42 | 102 | 10 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 16 | 0 | 0 | 0 | 22 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 93 | 502 | 0 | 19 | 341 | 0 | 58 | 337 | 20 | 42 | 102 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 395 | 1426 | | 319 | 1683 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.10 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.24 | 0.35 | | 0.06 | 0.20 | | 0.13 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 10.7 | | 9.2 | 9.8 | | 12.3 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.76 | 0.33 | 0.51 | 0.52 | 0.28 |
| Incremental Delay, d2 | 1.4 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.1 | 0.6 | 0.0 |
| Delay (s) | 11.4 | 11.4 | | 9.5 | 10.1 | | 8.2 | 13.9 | 4.1 | 7.4 | 7.1 | 3.3 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.4 | | | 10.1 | | | 12.2 | | | 7.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 96 | 409 | 83 | 44 | 265 | 65 | 64 | 371 | 44 | 57 | 143 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1463 | 3059 | | 1588 | 3002 | | 1541 | 3022 | | 1403 | 2791 | |
| Flt Permitted | 0.54 | 1.00 | | 0.42 | 1.00 | | 0.63 | 1.00 | | 0.46 | 1.00 | |
| Satd. Flow (perm) | 828 | 3059 | | 707 | 3002 | | 1015 | 3022 | | 678 | 2791 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 101 | 431 | 87 | 46 | 279 | 68 | 67 | 391 | 46 | 60 | 151 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 101 | 518 | 0 | 46 | 347 | 0 | 67 | 425 | 0 | 60 | 171 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 397 | 1468 | | 339 | 1441 | | 420 | 1249 | | 280 | 1154 | |
| v/s Ratio Prot | c0.17 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.12 | | | 0.07 | | | 0.07 | | | 0.09 | | |
| v/c Ratio | 0.25 | 0.35 | | 0.14 | 0.24 | | 0.16 | 0.34 | | 0.21 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.2 | | 10.8 | 11.5 | | 13.8 | 15.0 | | 14.2 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.5 | 0.7 | | 0.8 | 0.4 | | 0.8 | 0.7 | | 1.7 | 0.3 | |
| Delay (s) | 13.1 | 12.9 | | 11.7 | 11.9 | | 14.6 | 15.8 | | 15.9 | 14.0 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.9 | | | 11.8 | | | 15.6 | | | 14.5 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 49.4% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 109 | 327 | 37 | 23 | 321 | 47 | 64 | 412 | 26 | 43 | 206 | 46 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1473 | 1841 | | 1533 | 3073 | | 1372 | 2893 | |
| Flt Permitted | 0.45 | 1.00 | | 0.46 | 1.00 | | 0.59 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 731 | 1576 | | 717 | 1841 | | 949 | 3073 | | 597 | 2893 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 115 | 344 | 39 | 24 | 338 | 49 | 67 | 434 | 27 | 45 | 217 | 48 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 115 | 383 | 0 | 24 | 387 | 0 | 67 | 461 | 0 | 45 | 265 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 453 | 738 | | 360 | 793 | | 331 | 730 | | 193 | 633 | |
| v/s Ratio Prot | c0.02 | c0.24 | | 0.00 | 0.21 | | c0.01 | c0.15 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | | 0.06 | | |
| v/c Ratio | 0.25 | 0.52 | | 0.07 | 0.49 | | 0.20 | 0.63 | | 0.23 | 0.42 | |
| Uniform Delay, d1 | 13.3 | 15.9 | | 14.9 | 17.4 | | 21.4 | 29.1 | | 26.1 | 28.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.6 | | 0.1 | 2.1 | | 0.3 | 4.1 | | 0.6 | 2.0 | |
| Delay (s) | 13.6 | 18.5 | | 15.0 | 19.6 | | 21.7 | 33.2 | | 26.8 | 30.6 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.3 | | | 19.3 | | | 31.7 | | | 30.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 62.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↔ | | ↗ | ↕↔ | |
| Volume (vph) | 68 | 321 | 44 | 65 | 380 | 115 | 57 | 390 | 126 | 56 | 162 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2911 | | 1614 | 3156 | | 1581 | 2925 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2757 | | | 2464 | | 1044 | 3156 | | 628 | 2925 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 357 | 49 | 72 | 422 | 128 | 63 | 433 | 140 | 62 | 180 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 482 | 0 | 0 | 622 | 0 | 63 | 573 | 0 | 62 | 219 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1250 | | | 1117 | | 459 | 1389 | | 276 | 1287 | |
| v/s Ratio Prot | | | | | | | | c0.18 | | | 0.07 | |
| v/s Ratio Perm | | 0.17 | | | c0.25 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.14 | 0.41 | | 0.22 | 0.17 | |
| Uniform Delay, d1 | | 13.6 | | | 15.0 | | 12.5 | 14.4 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.0 | | 0.6 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.5 | | | 17.0 | | 13.1 | 15.3 | | 14.9 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.5 | | | 17.0 | | | 15.1 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.7% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue

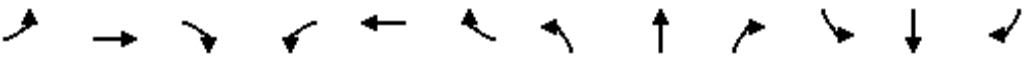










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 521 | 5 | 14 | 653 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 587 | 3144 | | 722 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 579 | 6 | 16 | 726 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 584 | 0 | 16 | 726 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 382 | 2046 | | 470 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.22 | | | | | | | | |
| v/s Ratio Perm | c0.27 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.42 | 0.29 | | 0.03 | 0.34 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 5.9 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.4 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.3 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.4 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.6 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 67 | 63 | 190 | 66 | 131 | 1972 | 88 | 70 | 499 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1505 | | 1547 | 1589 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.34 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 625 | 1505 | | 547 | 1589 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 71 | 66 | 200 | 69 | 138 | 2076 | 93 | 74 | 525 | 42 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 283 | 0 | 66 | 254 | 0 | 138 | 2076 | 75 | 74 | 525 | 17 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | | 1 | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 256 | 390 | | 238 | 411 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.72 | | 0.28 | 0.62 | | 0.39 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.7 | | 21.8 | 27.8 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.70 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 11.1 | | 2.9 | 6.8 | | 2.7 | 292.0 | 0.5 | 7.4 | 1.1 | 0.1 |
| Delay (s) | 28.3 | 39.9 | | 24.7 | 34.6 | | 10.8 | 309.5 | 8.1 | 25.6 | 18.9 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 36.6 | | | 32.7 | | | 279.5 | | | 19.4 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.9 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.14 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.4% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 218 | 15 | 15 | 149 | 9 | 18 | 166 | 27 | 31 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1852 | | | 1848 | | | 1902 | | | 1932 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1796 | | | 1800 | | | 1856 | | | 1830 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 15 | 15 | 154 | 9 | 19 | 171 | 28 | 32 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 263 | 0 | 0 | 175 | 0 | 0 | 210 | 0 | 0 | 201 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 746 | | | 748 | | | 857 | | | 845 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.35 | | | 0.23 | | | 0.24 | | | 0.24 | |
| Uniform Delay, d1 | | 13.0 | | | 12.3 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.62 | | | 1.08 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.7 | | | 0.7 | | | 0.7 | |
| Delay (s) | | 14.3 | | | 8.3 | | | 12.1 | | | 11.2 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.3 | | | 8.3 | | | 12.1 | | | 11.2 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 25 | 9 | 162 | 16 | 42 | 384 | 33 | 15 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3012 | | 1302 | 3049 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.61 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 967 | 3012 | | 835 | 3049 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 28 | 10 | 180 | 18 | 47 | 427 | 37 | 17 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 11 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 212 | 0 | 10 | 187 | 0 | 47 | 454 | 0 | 17 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 283 | 880 | | 244 | 891 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.24 | | 0.04 | 0.21 | | 0.07 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.6 | | 5.7 | 5.8 | |
| Progression Factor | 0.72 | 0.73 | | 0.72 | 0.71 | | 0.89 | 0.93 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.8 | 13.4 | | 12.2 | 12.9 | | 5.4 | 6.4 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.3 | | | 12.9 | | | 6.3 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.7 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.25 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 40.0% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 31 | 16 | 122 | 29 | 27 | 414 | 24 | 11 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 2962 | | 1515 | 2886 | | | 1878 | | | 1805 | |
| Flt Permitted | 0.65 | 1.00 | | 0.61 | 1.00 | | | 0.98 | | | 0.97 | |
| Satd. Flow (perm) | 1057 | 2962 | | 968 | 2886 | | | 1840 | | | 1758 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 34 | 18 | 136 | 32 | 30 | 460 | 27 | 12 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 20 | 0 | 0 | 19 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 212 | 0 | 18 | 149 | 0 | 0 | 514 | 0 | 0 | 205 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 423 | 1185 | | 387 | 1154 | | | 878 | | | 838 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.24 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.3 | | | 12.3 | | | 10.1 | |
| Progression Factor | 0.99 | 0.90 | | 0.86 | 0.88 | | | 1.01 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 12.8 | 11.7 | | 10.5 | 11.1 | | | 15.2 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 11.9 | | | 11.0 | | | 15.2 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 60.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 90 | 127 | 51 | 2 | 84 | 33 | 19 | 275 | 9 | 6 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1890 | | 1587 | 1873 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.58 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1138 | 1890 | | 975 | 1873 | | | 1933 | | | 1919 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 57 | 2 | 93 | 37 | 21 | 306 | 10 | 7 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 198 | 0 | 2 | 130 | 0 | 0 | 337 | 0 | 0 | 243 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 350 | 582 | | 300 | 576 | | | 1100 | | | 1092 | |
| v/s Ratio Prot | c0.10 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.17 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.34 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.4 | | 15.6 | 16.7 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.90 | 0.88 | | 0.85 | 0.92 | | | 0.93 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.6 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.3 | 16.9 | | 13.4 | 16.3 | | | 7.5 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.1 | | | 16.2 | | | 7.5 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 52 | 1 | 3 | 10 | 39 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1673 | | 1710 | 1413 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1262 | 1673 | | 1283 | 1413 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 58 | 1 | 3 | 11 | 43 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 26 | 0 | 1 | 6 | 0 | 43 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 355 | 391 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.04 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.07 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.48 | 2.42 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.34 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.4 | 42.1 | | 17.0 | 17.1 | | 6.6 | 10.3 | 7.0 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.9 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|----------------------|------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 233 | 76 | 120 | 374 | 0 | 0 | 0 | 0 | 71 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 0.99 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2824 | | 1620 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2824 | | 860 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 245 | 80 | 126 | 394 | 0 | 0 | 0 | 0 | 75 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 294 | 0 | 126 | 394 | 0 | 0 | 0 | 0 | 75 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 932 | | 656 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.10 | | 0.04 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.06 | | | | | | | | |
| v/c Ratio | | 0.31 | | 0.19 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.0 | | 10.5 | 9.5 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.94 | 2.06 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.6 | 2.1 | |
| Delay (s) | | 25.9 | | 21.0 | 19.8 | | | | | 24.9 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 25.9 | | | 20.1 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | HCM Level of Service | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | Sum of lost time (s) | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue

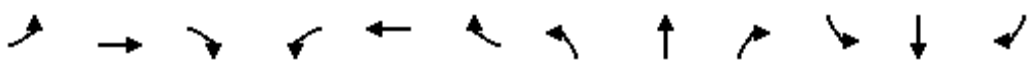
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 175 | 0 | 0 | 320 | 68 | 174 | 554 | 315 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.35 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 612 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 184 | 0 | 0 | 337 | 72 | 183 | 583 | 332 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 222 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 184 | 0 | 0 | 391 | 0 | 183 | 583 | 110 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 681 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.10 | | | 0.66 | | 0.32 | 0.99 | 0.22 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.2 | | 25.1 | 33.4 | 24.2 | | | |
| Progression Factor | 0.25 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.93 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.6 | | 0.9 | 27.7 | 0.6 | | | |
| Delay (s) | 3.6 | 2.5 | | | 41.8 | | 19.7 | 54.1 | 47.2 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 3.0 | | | 41.8 | | | 46.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | | HCM Level of Service | | D | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 450 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 4 | 215 | 193 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3105 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3105 | | 290 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 469 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 201 |
| RTOR Reduction (vph) | 0 | 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 133 |
| Lane Group Flow (vph) | 0 | 707 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 68 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1118 | | 395 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.63 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.5 | | 12.4 | 10.9 | | | | | 21.8 | 23.4 | 22.9 |
| Progression Factor | | 1.00 | | 0.55 | 0.69 | | | | | 0.74 | 0.79 | 0.93 |
| Incremental Delay, d2 | | 2.7 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.2 | | 7.0 | 7.6 | | | | | 16.1 | 18.9 | 21.8 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.2 | | | 7.6 | | | 0.0 | | | 20.2 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 394 | 60 | 0 | 0 | 57 | 3 | 569 | 644 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3098 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1086 | 2344 | | | 3098 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 406 | 62 | 0 | 0 | 59 | 3 | 587 | 664 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 203 | 265 | 0 | 0 | 59 | 0 | 587 | 664 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 683 | 1447 | | | 465 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.18 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.2 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.24 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 42.9 | 65.4 | 0.2 | | | |
| Delay (s) | 4.2 | 3.6 | | | 37.4 | | 74.4 | 96.9 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.9 | | | 37.4 | | | 83.2 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.5 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 163 | 262 | 70 | 58 | 184 | 114 | 43 | 1151 | 62 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2835 | | | 2770 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.66 | | | 0.80 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1916 | | | 2247 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 273 | 73 | 60 | 192 | 119 | 45 | 1199 | 65 | 92 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 66 | 0 | 0 | 0 | 24 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 500 | 0 | 0 | 305 | 0 | 45 | 1199 | 41 | 92 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 876 | | | 740 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.20 | | | 0.14 | | 0.06 | | 0.03 | 0.24 | | 0.01 |
| v/c Ratio | | 0.57 | | | 0.41 | | 0.15 | 0.99 | 0.08 | 0.64 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.6 | | | 22.1 | | 14.7 | 25.6 | 16.4 | 19.0 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.33 | 0.86 | 1.42 | 1.86 | 1.67 | 3.21 |
| Incremental Delay, d2 | | 2.7 | | | 1.7 | | 0.6 | 17.7 | 0.2 | 18.1 | 1.0 | 0.1 |
| Delay (s) | | 21.3 | | | 23.8 | | 20.3 | 39.8 | 23.4 | 53.3 | 32.3 | 51.8 |
| Level of Service | | C | | | C | | C | D | C | D | C | D |
| Approach Delay (s) | | 21.3 | | | 23.8 | | | 38.3 | | | 36.7 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.9 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 80.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 397 | 0 | 0 | 328 | 81 | 28 | 63 | 98 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1668 | | | 1582 | | | | |
| Flt Permitted | | 0.93 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1592 | | | 1668 | | | 1582 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 441 | 0 | 0 | 364 | 90 | 31 | 70 | 109 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 60 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 490 | 0 | 0 | 440 | 0 | 0 | 150 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 833 | | | 872 | | | 560 | | | | |
| v/s Ratio Prot | | | | | 0.26 | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.59 | | | 0.50 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 10.7 | | | 10.0 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.50 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.0 | | | 1.9 | | | 1.2 | | | | |
| Delay (s) | | 13.7 | | | 6.9 | | | 16.2 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 13.7 | | | 6.9 | | | 16.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 45 | 397 | 31 | 20 | 340 | 49 | 16 | 175 | 35 | 51 | 107 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1887 | | | 1833 | | | 3185 | | | 3154 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.93 | | | 0.83 | |
| Satd. Flow (perm) | | 1763 | | | 1780 | | | 2981 | | | 2649 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 441 | 34 | 22 | 378 | 54 | 18 | 194 | 39 | 57 | 119 | 21 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 8 | 0 | 0 | 23 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 521 | 0 | 0 | 446 | 0 | 0 | 228 | 0 | 0 | 185 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 814 | | | 822 | | | 1238 | | | 1100 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.25 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.64 | | | 0.54 | | | 0.18 | | | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 12.6 | | | 12.0 | | | 11.9 | |
| Progression Factor | | 0.62 | | | 0.57 | | | 0.89 | | | 0.53 | |
| Incremental Delay, d2 | | 3.3 | | | 2.5 | | | 0.3 | | | 0.3 | |
| Delay (s) | | 11.6 | | | 9.7 | | | 11.0 | | | 6.6 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 11.6 | | | 9.7 | | | 11.0 | | | 6.6 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 10.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.42 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 77.9% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 265 | 20 | 28 | 280 | 61 | 46 | 319 | 89 | 48 | 96 | 20 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1501 | 2938 | | 1583 | 2932 | | 1497 | 3034 | | 1594 | 2943 | |
| Flt Permitted | 0.49 | 1.00 | | 0.55 | 1.00 | | 0.67 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 781 | 2938 | | 917 | 2932 | | 1056 | 3034 | | 809 | 2943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 56 | 294 | 22 | 31 | 311 | 68 | 51 | 354 | 99 | 53 | 107 | 22 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 28 | 0 | 0 | 39 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 56 | 307 | 0 | 31 | 351 | 0 | 51 | 414 | 0 | 53 | 119 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 264 | 994 | | 310 | 992 | | 569 | 1634 | | 436 | 1585 | |
| v/s Ratio Prot | | 0.10 | | | c0.12 | | | c0.14 | | | 0.04 | |
| v/s Ratio Perm | 0.07 | | | 0.03 | | | 0.05 | | | 0.07 | | |
| v/c Ratio | 0.21 | 0.31 | | 0.10 | 0.35 | | 0.09 | 0.25 | | 0.12 | 0.07 | |
| Uniform Delay, d1 | 15.3 | 15.9 | | 14.7 | 16.2 | | 7.3 | 8.0 | | 7.4 | 7.2 | |
| Progression Factor | 0.60 | 0.58 | | 0.78 | 0.78 | | 0.64 | 0.68 | | 1.21 | 1.21 | |
| Incremental Delay, d2 | 1.5 | 0.7 | | 0.6 | 1.0 | | 0.3 | 0.4 | | 0.6 | 0.1 | |
| Delay (s) | 10.7 | 9.9 | | 12.1 | 13.7 | | 5.0 | 5.8 | | 9.5 | 8.8 | |
| Level of Service | B | A | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 10.0 | | | 13.5 | | | 5.7 | | | 9.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.4 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.29 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 83 | 380 | 26 | 37 | 316 | 82 | 11 | 308 | 44 | 41 | 118 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 3014 | | 1334 | 3524 | | | 3436 | | | 3308 | |
| Flt Permitted | 0.49 | 1.00 | | 0.49 | 1.00 | | | 0.95 | | | 0.84 | |
| Satd. Flow (perm) | 719 | 3014 | | 687 | 3524 | | | 3255 | | | 2814 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 87 | 400 | 27 | 39 | 333 | 86 | 12 | 324 | 46 | 43 | 124 | 40 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 35 | 0 | 0 | 16 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 87 | 420 | 0 | 39 | 384 | 0 | 0 | 366 | 0 | 0 | 183 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 343 | 1437 | | 328 | 1681 | | | 1302 | | | 1126 | |
| v/s Ratio Prot | | c0.14 | | | 0.11 | | | | | | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | | c0.11 | | | 0.07 | |
| v/c Ratio | 0.25 | 0.29 | | 0.12 | 0.23 | | | 0.28 | | | 0.16 | |
| Uniform Delay, d1 | 10.1 | 10.3 | | 9.4 | 10.0 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.58 | 1.62 | | 0.83 | 0.81 | | | 0.52 | | | 0.64 | |
| Incremental Delay, d2 | 1.7 | 0.5 | | 0.7 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 17.7 | 17.3 | | 8.4 | 8.4 | | | 7.3 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.4 | | | 8.4 | | | 7.3 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  |  |
| Volume (vph) | 98 | 293 | 98 | 104 | 314 | 104 | 79 | 84 | 88 | 88 | 84 | 79 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3024 | | | 1822 | | | 1828 | |
| Flt Permitted | | 0.75 | 1.00 | | 0.76 | | | 0.81 | | | 0.78 | |
| Satd. Flow (perm) | | 1247 | 1409 | | 2316 | | | 1497 | | | 1448 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 326 | 109 | 116 | 349 | 116 | 88 | 93 | 98 | 98 | 93 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 34 | 0 | 0 | 30 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 435 | 57 | 0 | 547 | 0 | 0 | 249 | 0 | 0 | 253 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 652 | 737 | | 1211 | | | 484 | | | 468 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.04 | | 0.24 | | | 0.17 | | | c0.17 | |
| v/c Ratio | | 0.67 | 0.08 | | 0.45 | | | 0.51 | | | 0.54 | |
| Uniform Delay, d1 | | 11.4 | 7.7 | | 9.7 | | | 17.9 | | | 18.0 | |
| Progression Factor | | 2.01 | 5.61 | | 0.39 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 5.2 | 0.2 | | 1.2 | | | 3.9 | | | 4.4 | |
| Delay (s) | | 28.1 | 43.4 | | 4.9 | | | 21.7 | | | 22.5 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 31.2 | | | 4.9 | | | 21.7 | | | 22.5 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 70.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 72 | 378 | 19 | 15 | 417 | 63 | 28 | 103 | 41 | 43 | 90 | 89 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1474 | 3019 | | 1573 | 2999 | | | 3444 | | | 3420 | |
| Flt Permitted | 0.41 | 1.00 | | 0.47 | 1.00 | | | 0.89 | | | 0.88 | |
| Satd. Flow (perm) | 633 | 3019 | | 778 | 2999 | | | 3097 | | | 3029 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 80 | 420 | 21 | 17 | 463 | 70 | 31 | 114 | 46 | 48 | 100 | 99 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 25 | 0 | 0 | 55 | 0 |
| Lane Group Flow (vph) | 80 | 435 | 0 | 17 | 515 | 0 | 0 | 166 | 0 | 0 | 192 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 273 | 1300 | | 335 | 1292 | | | 1382 | | | 1351 | |
| v/s Ratio Prot | | 0.14 | | | c0.17 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.05 | | | c0.06 | |
| v/c Ratio | 0.29 | 0.33 | | 0.05 | 0.40 | | | 0.12 | | | 0.14 | |
| Uniform Delay, d1 | 12.1 | 12.3 | | 10.8 | 12.7 | | | 10.5 | | | 10.6 | |
| Progression Factor | 1.00 | 1.02 | | 1.14 | 0.98 | | | 1.00 | | | 0.71 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.1 | 13.2 | | 12.4 | 12.9 | | | 10.7 | | | 7.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.3 | | | 12.9 | | | 10.7 | | | 7.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 85 | 453 | 71 | 94 | 449 | 284 | 41 | 332 | 92 | 222 | 159 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | | 3178 | | | 3072 | | | 3147 | | | 3121 | |
| Flt Permitted | | 0.64 | | | 0.74 | | | 0.89 | | | 0.63 | |
| Satd. Flow (perm) | | 2051 | | | 2284 | | | 2813 | | | 2013 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 503 | 79 | 104 | 499 | 316 | 46 | 369 | 102 | 247 | 177 | 54 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 104 | 0 | 0 | 33 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 0 | 660 | 0 | 0 | 815 | 0 | 0 | 484 | 0 | 0 | 463 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 820 | | | 914 | | | 1286 | | | 619 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.32 | | | c0.36 | | | 0.13 | | | c0.23 | |
| v/c Ratio | | 0.81 | | | 0.89 | | | 0.38 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.3 | | | 18.2 | | | 12.0 | | | 20.2 | |
| Progression Factor | | 1.74 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 8.2 | | | 12.8 | | | 0.8 | | | 8.0 | |
| Delay (s) | | 38.1 | | | 31.0 | | | 12.8 | | | 26.0 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 38.1 | | | 31.0 | | | 12.8 | | | 26.0 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 28.3 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.81 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 87.6% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 722 | 118 | 45 | 751 | 0 | 132 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1582 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2542 | | | 1311 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 802 | 131 | 50 | 834 | 0 | 147 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 915 | 0 | 0 | 884 | 0 | 0 | 204 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.16 | | | | | |
| v/c Ratio | 0.48 | | | 0.95 | | | 0.87 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.7 | | | 36.0 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 17.4 | | | 33.6 | | | | | |
| Delay (s) | 0.7 | | | 60.9 | | | 69.6 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.7 | | | 60.9 | | | 69.6 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 34.4 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.80 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.1% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 501 | 187 | 274 | 642 | 183 | 101 | 20 | 185 | 78 | 7 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1755 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 516 | 3020 | | 342 | 3257 | 1457 | | 1582 | | 685 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 557 | 208 | 304 | 713 | 203 | 112 | 22 | 206 | 87 | 8 | 83 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 75 | 0 | 0 | 0 | 45 |
| Lane Group Flow (vph) | 137 | 723 | 0 | 304 | 713 | 99 | 0 | 265 | 0 | 87 | 8 | 38 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Effective Green, g (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Actuated g/C Ratio | 0.45 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 335 | 1030 | | 383 | 1281 | 712 | | 362 | | 335 | 613 | 673 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.70 | | 0.79 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.7 | | 14.6 | 21.2 | 12.6 | | 32.1 | | 21.3 | 18.6 | 13.4 |
| Progression Factor | 1.90 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.6 | | 11.4 | 1.7 | 0.1 | | 7.9 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 30.2 | 44.3 | | 26.0 | 23.0 | 12.7 | | 40.1 | | 21.7 | 18.7 | 13.4 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.1 | | | 22.0 | | | 40.1 | | | 17.7 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 74.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 517 | 247 | 6 | 529 | 0 | 0 | 0 | 0 | 32 | 0 | 570 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 574 | 274 | 7 | 588 | 0 | 0 | 0 | 0 | 36 | 0 | 633 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 588 | | | 574 | | | 882 | 1176 | 287 | 888 | 1176 | 294 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 588 | | | 574 | | | 882 | 1176 | 287 | 888 | 1176 | 294 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 9 |
| cM capacity (veh/h) | 963 | | | 974 | | | 20 | 184 | 701 | 232 | 184 | 694 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 287 | 287 | 274 | 203 | 392 | 36 | 633 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 633 | | | | | |
| cSH | 1700 | 1700 | 1700 | 974 | 1700 | 232 | 694 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.91 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 302 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.3 | 40.8 | | | | | |
| Lane LOS | | | | A | | C | E | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 39.9 | | | | | | |
| Approach LOS | | | | | | E | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | 12.7 | | | | | | | | | | | |
| Intersection Capacity Utilization | 59.5% | | | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013






















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 549 | 0 | 535 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 610 | 0 | 594 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 305 | 305 | 594 | | | |
| Volume Left (vph) | 305 | 305 | 594 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.9 | 6.9 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 500 | 499 | 618 | | | |
| Control Delay (s) | 18.2 | 18.2 | 48.3 | | | |
| Approach Delay (s) | 18.2 | | 48.3 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.1 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.5% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | |  |   | | | | | |   | |
| Volume (vph) | 0 | 340 | 46 | 126 | 323 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3092 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.45 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3092 | | 746 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 378 | 51 | 140 | 359 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 417 | 0 | 140 | 359 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 527 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.13 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.27 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.3 | | 11.3 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.27 | 0.25 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.6 | | 1.2 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.0 | | 4.2 | 2.4 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.0 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 33.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 344 | 0 | 0 | 400 | 76 | 49 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4420 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 656 | 3257 | | | 3073 | | | 4420 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 382 | 0 | 0 | 444 | 84 | 54 | 72 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 382 | 0 | 0 | 510 | 0 | 0 | 141 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 485 | 1839 | | | 1265 | | | 1404 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.21 | | | 0.40 | | | 0.10 | | | | |
| Uniform Delay, d1 | 12.1 | 9.1 | | | 17.6 | | | 20.4 | | | | |
| Progression Factor | 0.34 | 0.33 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.0 | | | 0.1 | | | | |
| Delay (s) | 4.7 | 3.3 | | | 18.6 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.6 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 39 | 31 | 243 | 31 | 118 | 85 | 52 | 56 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.88 | | | 0.75 | | | 0.89 | |
| Satd. Flow (perm) | | 2659 | | | 2645 | | | 1373 | | | 1569 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 341 | 43 | 34 | 270 | 34 | 131 | 94 | 58 | 62 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 414 | 0 | 0 | 325 | 0 | 0 | 269 | 0 | 0 | 255 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 941 | | | 936 | | | 676 | | | 772 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.12 | | | c0.20 | | | 0.16 | |
| v/c Ratio | | 0.44 | | | 0.35 | | | 0.40 | | | 0.33 | |
| Uniform Delay, d1 | | 16.1 | | | 15.5 | | | 10.4 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 1.0 | | | 1.7 | | | 1.1 | |
| Delay (s) | | 17.6 | | | 16.5 | | | 12.2 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.6 | | | 16.5 | | | 12.2 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.42 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 63.1% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 202 | 39 | 50 | 176 | 62 | 71 | 1001 | 70 | 75 | 428 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.43 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 675 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 41 | 53 | 185 | 65 | 75 | 1054 | 74 | 79 | 451 | 84 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 44 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 178 | 235 | 0 | 53 | 209 | 0 | 75 | 1054 | 30 | 79 | 451 | 33 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 324 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.35 | | c0.03 | 0.15 | |
| v/s Ratio Perm | c0.15 | | | 0.04 | | | 0.09 | | 0.02 | 0.21 | | 0.03 |
| v/c Ratio | 0.49 | 0.24 | | 0.14 | 0.18 | | 0.23 | 0.89 | 0.06 | 0.55 | 0.39 | 0.07 |
| Uniform Delay, d1 | 20.6 | 20.7 | | 18.4 | 20.3 | | 15.0 | 24.3 | 16.3 | 17.5 | 18.7 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.05 | 0.61 | 0.83 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 0.8 | 0.3 | | 1.7 | 10.5 | 0.2 | 13.0 | 0.9 | 0.2 |
| Delay (s) | 25.2 | 21.3 | | 19.2 | 20.7 | | 16.6 | 34.8 | 16.5 | 48.9 | 12.2 | 13.7 |
| Level of Service | C | C | | B | C | | B | C | B | D | B | B |
| Approach Delay (s) | | 22.9 | | | 20.4 | | | 32.6 | | | 17.1 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 70.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 38 | 256 | 18 | 14 | 216 | 8 | 35 | 113 | 25 | 20 | 57 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1829 | 1382 | | 1910 | 1331 | | 1860 | 1452 | | 1811 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 269 | 19 | 15 | 227 | 8 | 37 | 119 | 26 | 21 | 60 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 0 | 309 | 9 | 0 | 242 | 4 | 0 | 156 | 11 | 0 | 81 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 844 | 638 | | 882 | 614 | | 773 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.20 | 0.02 | | 0.11 | 0.03 |
| Uniform Delay, d1 | | 11.3 | 9.5 | | 10.8 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.48 | 0.39 | | 1.38 | 1.85 | | 0.94 | 0.85 |
| Incremental Delay, d2 | | 1.2 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.9 | 3.7 | | 17.3 | 20.8 | | 11.2 | 9.6 |
| Level of Service | | B | A | | A | A | | B | C | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.8 | | | 17.8 | | | 10.6 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | | 8.0 | |
| Intersection Capacity Utilization | | | 54.8% | | | | ICU Level of Service | | | | A | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 242 | 10 | 15 | 200 | 30 | 13 | 247 | 26 | 30 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3022 | | 1520 | 2981 | | 1520 | 2996 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.58 | 1.00 | | 0.68 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3022 | | 928 | 2981 | | 1091 | 2996 | | 884 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 269 | 11 | 17 | 222 | 33 | 14 | 274 | 29 | 33 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 18 | 0 | 0 | 12 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 275 | 0 | 17 | 237 | 0 | 14 | 291 | 0 | 33 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1488 | | 314 | 1009 | | 453 | 1244 | | 367 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.09 | | | c0.08 | | | c0.10 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.04 | | |
| v/c Ratio | 0.45 | 0.19 | | 0.05 | 0.24 | | 0.03 | 0.23 | | 0.09 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 9.2 | | 14.5 | 15.5 | | 11.3 | 12.3 | | 11.5 | 11.5 | |
| Progression Factor | 0.83 | 0.42 | | 0.83 | 0.75 | | 0.58 | 0.65 | | 1.08 | 1.11 | |
| Incremental Delay, d2 | 8.3 | 0.3 | | 0.3 | 0.5 | | 0.1 | 0.4 | | 0.5 | 0.1 | |
| Delay (s) | 30.9 | 4.1 | | 12.4 | 12.2 | | 6.7 | 8.4 | | 13.0 | 12.8 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.7 | | | 12.2 | | | 8.3 | | | 12.9 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 35.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















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|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 253 | 16 | 97 | 216 | 43 | 26 | 286 | 20 | 25 | 143 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3013 | | 1520 | 2964 | | | 3215 | | | 3173 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | 921 | 3013 | | 1520 | 2964 | | | 2980 | | | 2839 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 281 | 18 | 108 | 240 | 48 | 29 | 318 | 22 | 28 | 159 | 28 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 7 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 41 | 292 | 0 | 108 | 263 | 0 | 0 | 362 | 0 | 0 | 198 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 283 | 927 | | 140 | 1322 | | | 1146 | | | 1092 | |
| v/s Ratio Prot | c0.10 | | | c0.07 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.12 | | | 0.07 | | |
| v/c Ratio | 0.14 | 0.32 | | 0.77 | 0.20 | | | 0.32 | | | 0.18 | |
| Uniform Delay, d1 | 16.3 | 17.2 | | 28.8 | 10.9 | | | 14.0 | | | 13.2 | |
| Progression Factor | 0.61 | 0.60 | | 1.35 | 0.97 | | | 0.72 | | | 0.76 | |
| Incremental Delay, d2 | 1.1 | 0.9 | | 28.9 | 0.3 | | | 0.7 | | | 0.4 | |
| Delay (s) | 11.0 | 11.2 | | 67.9 | 10.9 | | | 10.7 | | | 10.4 | |
| Level of Service | B | B | | E | B | | | B | | | B | |
| Approach Delay (s) | 11.2 | | | 26.4 | | | 10.7 | | | 10.4 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 42.5% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 264 | 14 | 70 | 330 | 70 | 25 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.91 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1556 | | | 3159 | | | | |
| Flt Permitted | | 0.97 | | | 0.91 | | | 1.00 | | | | |
| Satd. Flow (perm) | | 1548 | | | 1425 | | | 3159 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 16 | 293 | 16 | 78 | 367 | 78 | 28 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 140 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 323 | 0 | 0 | 515 | 0 | 0 | 172 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 42.4 | | | 42.4 | | | 14.6 | | | | |
| Effective Green, g (s) | | 42.4 | | | 42.4 | | | 14.6 | | | | |
| Actuated g/C Ratio | | 0.65 | | | 0.65 | | | 0.22 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 1010 | | | 930 | | | 710 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.21 | | | 0.36 | | | 0.05 | | | | |
| v/c Ratio | | 0.32 | | | 0.55 | | | 0.24 | | | | |
| Uniform Delay, d1 | | 5.0 | | | 6.2 | | | 20.7 | | | | |
| Progression Factor | | 2.07 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.8 | | | 2.4 | | | 0.8 | | | | |
| Delay (s) | | 11.1 | | | 8.5 | | | 21.4 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 11.1 | | | 8.5 | | | 21.4 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 62.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

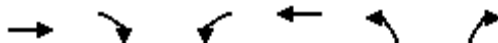


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 81 | 345 | 392 | 44 | 66 | 75 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 85 | 363 | 413 | 46 | 69 | 79 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.87 | | | | 0.87 | 0.87 |
| vC, conflicting volume | 480 | | | | 995 | 460 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 325 | | | | 919 | 302 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 92 | | | | 70 | 87 |
| cM capacity (veh/h) | 1010 | | | | 235 | 629 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 448 | 459 | 69 | 79 | | |
| Volume Left | 85 | 0 | 69 | 0 | | |
| Volume Right | 0 | 46 | 0 | 79 | | |
| cSH | 1010 | 1700 | 235 | 629 | | |
| Volume to Capacity | 0.08 | 0.27 | 0.30 | 0.13 | | |
| Queue Length 95th (ft) | 7 | 0 | 30 | 11 | | |
| Control Delay (s) | 2.5 | 0.0 | 26.7 | 11.5 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.5 | 0.0 | 18.6 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.7 | | | |
| Intersection Capacity Utilization | | | 63.5% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 471 | 1 | 14 | 644 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1712 | | |
| Flt Permitted | 1.00 | | | 0.99 | | |
| Satd. Flow (perm) | 1714 | | | 1690 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 523 | 1 | 16 | 716 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 524 | 0 | 0 | 732 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 616 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.43 | | |
| v/c Ratio | 0.44 | | | 1.19 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.05 | | | 1.00 | | |
| Incremental Delay, d2 | 0.3 | | | 100.3 | | |
| Delay (s) | 0.6 | | | 127.3 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.6 | | | 127.3 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 74.5 | | HCM Level of Service | E |
| HCM Volume to Capacity ratio | | | 0.82 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 51.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013




| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 182 | 191 | 25 | 552 | 0 | 0 | 0 | 0 | 3 | 0 | 254 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 202 | 212 | 28 | 613 | 0 | 0 | 0 | 0 | 3 | 0 | 282 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 613 | | | 202 | | | 977 | 977 | 207 | 770 | 871 | 613 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 613 | | | 202 | | | 977 | 977 | 207 | 770 | 871 | 613 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 34 |
| cM capacity (veh/h) | 976 | | | 988 | | | 70 | 246 | 805 | 287 | 283 | 430 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 135 | 280 | 641 | 3 | 282 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 212 | 0 | 0 | 282 | | | | | | | |
| cSH | 1700 | 1700 | 988 | 287 | 430 | | | | | | | |
| Volume to Capacity | 0.08 | 0.16 | 0.03 | 0.01 | 0.66 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 115 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.7 | 27.9 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 27.8 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.2% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 185 | 0 | 577 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 206 | 0 | 641 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 103 | 103 | 641 | | | |
| Volume Left (vph) | 103 | 103 | 641 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.8 | | | |
| Degree Utilization, x | 0.19 | 0.19 | 0.86 | | | |
| Capacity (veh/h) | 511 | 511 | 735 | | | |
| Control Delay (s) | 10.2 | 10.2 | 30.0 | | | |
| Approach Delay (s) | 10.2 | | 30.0 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 25.2 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.0% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 437 | 210 | 157 | 465 | 0 | 0 | 0 | 0 | 123 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3691 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3691 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 460 | 221 | 165 | 489 | 0 | 0 | 0 | 0 | 129 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 101 | 94 |
| Lane Group Flow (vph) | 0 | 460 | 61 | 0 | 654 | 0 | 0 | 0 | 0 | 71 | 238 | 64 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.2 | 39.2 | | 73.3 | | | | | 19.6 | 19.6 | 64.8 |
| Effective Green, g (s) | | 39.2 | 39.2 | | 73.3 | | | | | 19.6 | 19.6 | 64.8 |
| Actuated g/C Ratio | | 0.25 | 0.25 | | 0.46 | | | | | 0.12 | 0.12 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 730 | 294 | | 1545 | | | | | 165 | 452 | 454 |
| v/s Ratio Prot | | c0.15 | | | c0.19 | | | | | 0.05 | c0.06 | |
| v/s Ratio Perm | | | 0.05 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.63 | 0.21 | | 0.42 | | | | | 0.43 | 0.53 | 0.14 |
| Uniform Delay, d1 | | 53.9 | 48.0 | | 29.1 | | | | | 65.0 | 65.8 | 30.0 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.1 | 1.6 | | 0.1 | | | | | 1.8 | 1.1 | 0.1 |
| Delay (s) | | 58.0 | 49.6 | | 0.7 | | | | | 66.8 | 67.0 | 30.2 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 55.3 | | | 0.7 | | | 0.0 | | | 56.7 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.9 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 29.9 | | | |
| Intersection Capacity Utilization | | | 53.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 348 | 0 | 0 | 384 | 91 | 238 | 150 | 135 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3009 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3009 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 387 | 0 | 0 | 427 | 101 | 264 | 167 | 150 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 53 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 387 | 0 | 0 | 427 | 20 | 198 | 330 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 78.7 | 78.7 | | | 32.3 | 32.3 | 22.2 | 22.2 | | | | |
| Effective Green, g (s) | 78.7 | 78.7 | | | 32.3 | 32.3 | 22.2 | 22.2 | | | | |
| Actuated g/C Ratio | 0.49 | 0.49 | | | 0.20 | 0.20 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 774 | 1656 | | | 636 | 294 | 212 | 417 | | | | |
| v/s Ratio Prot | c0.15 | 0.11 | | | c0.14 | | c0.13 | 0.11 | | | | |
| v/s Ratio Perm | | | | | | 0.01 | | | | | | |
| v/c Ratio | 0.30 | 0.23 | | | 0.67 | 0.07 | 0.93 | 0.79 | | | | |
| Uniform Delay, d1 | 24.3 | 23.3 | | | 59.0 | 51.7 | 68.2 | 66.7 | | | | |
| Progression Factor | 0.07 | 0.08 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 2.8 | 0.1 | 43.4 | 9.9 | | | | |
| Delay (s) | 2.0 | 1.9 | | | 61.7 | 51.8 | 111.5 | 76.6 | | | | |
| Level of Service | A | A | | | E | D | F | E | | | | |
| Approach Delay (s) | | 1.9 | | | 59.8 | | | 88.5 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.6 | | | HCM Level of Service | | D | | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | 28.8 | | | | |
| Intersection Capacity Utilization | | | 49.4% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 273 | 75 | 35 | 141 | 45 | 88 | 824 | 62 | 59 | 448 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1536 | 1556 | 1328 | 1595 | 1719 | | 1525 | 2990 | | 1509 | 2870 | |
| Flt Permitted | 0.52 | 1.00 | 1.00 | 0.50 | 1.00 | | 0.34 | 1.00 | | 0.15 | 1.00 | |
| Satd. Flow (perm) | 844 | 1556 | 1328 | 835 | 1719 | | 539 | 2990 | | 238 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 287 | 79 | 37 | 148 | 47 | 93 | 867 | 65 | 62 | 472 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 12 | 0 | 0 | 6 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 232 | 287 | 27 | 37 | 183 | 0 | 93 | 926 | 0 | 62 | 559 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 386 | 557 | 461 | 309 | 541 | | 275 | 1134 | | 163 | 1089 | |
| v/s Ratio Prot | c0.04 | 0.18 | | 0.00 | 0.11 | | 0.02 | c0.31 | | c0.02 | 0.19 | |
| v/s Ratio Perm | c0.20 | | 0.02 | 0.04 | | | 0.12 | | | 0.14 | | |
| v/c Ratio | 0.60 | 0.52 | 0.06 | 0.12 | 0.34 | | 0.34 | 0.82 | | 0.38 | 0.51 | |
| Uniform Delay, d1 | 20.9 | 22.7 | 19.6 | 20.3 | 23.6 | | 16.6 | 25.1 | | 17.7 | 21.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.6 | 3.4 | 0.2 | 0.2 | 1.7 | | 0.7 | 6.5 | | 1.5 | 1.7 | |
| Delay (s) | 23.5 | 26.1 | 19.8 | 20.4 | 25.3 | | 17.3 | 31.6 | | 19.2 | 23.2 | |
| Level of Service | C | C | B | C | C | | B | C | | B | C | |
| Approach Delay (s) | | 24.3 | | | 24.5 | | | 30.3 | | | 22.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Volume (vph) | 44 | 269 | 16 | 5 | 182 | 19 | 35 | 80 | 16 | 11 | 44 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1912 | | | 1848 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.99 | 1.00 | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | | 1816 | 1482 | | 1592 | 1198 | | 1794 | | | 1810 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 46 | 283 | 17 | 5 | 192 | 20 | 37 | 84 | 17 | 12 | 46 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 10 | 0 | 8 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 0 | 329 | 8 | 0 | 197 | 10 | 0 | 130 | 0 | 0 | 75 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 894 | 730 | | 784 | 590 | | 745 | | | 752 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | 0.01 | | 0.12 | 0.01 | | c0.07 | | | 0.04 | |
| v/c Ratio | | 0.37 | 0.01 | | 0.25 | 0.02 | | 0.18 | | | 0.10 | |
| Uniform Delay, d1 | | 10.2 | 8.4 | | 9.6 | 8.4 | | 12.0 | | | 11.6 | |
| Progression Factor | | 1.00 | 1.00 | | 2.00 | 2.96 | | 1.00 | | | 1.55 | |
| Incremental Delay, d2 | | 1.2 | 0.0 | | 0.8 | 0.1 | | 0.5 | | | 0.3 | |
| Delay (s) | | 11.4 | 8.5 | | 19.9 | 25.0 | | 12.5 | | | 18.2 | |
| Level of Service | | B | A | | B | C | | B | | | B | |
| Approach Delay (s) | | 11.3 | | | 20.4 | | | 12.5 | | | 18.2 | |
| Approach LOS | | B | | | C | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 14.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.28 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 55.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 75 | 208 | 24 | 6 | 133 | 6 | 41 | 228 | 22 | 9 | 53 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1663 | 1392 | | 1604 | 1497 | | 1755 | 1390 | | 1653 | |
| Flt Permitted | | 0.88 | 1.00 | | 0.99 | 1.00 | | 0.95 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 1481 | 1392 | | 1585 | 1497 | | 1680 | 1390 | | 1612 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 219 | 25 | 6 | 140 | 6 | 43 | 240 | 23 | 9 | 56 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 16 | 0 | 0 | 4 | 0 | 0 | 12 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 298 | 9 | 0 | 146 | 2 | 0 | 283 | 11 | 0 | 81 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 524 | 493 | | 561 | 530 | | 827 | 684 | | 794 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.09 | 0.00 | | c0.17 | 0.01 | | 0.05 | |
| v/c Ratio | | 0.57 | 0.02 | | 0.26 | 0.00 | | 0.34 | 0.02 | | 0.10 | |
| Uniform Delay, d1 | | 17.0 | 13.7 | | 14.9 | 13.6 | | 10.1 | 8.4 | | 8.8 | |
| Progression Factor | | 1.90 | 3.09 | | 0.92 | 0.93 | | 0.32 | 0.30 | | 1.02 | |
| Incremental Delay, d2 | | 4.2 | 0.1 | | 1.1 | 0.0 | | 0.9 | 0.0 | | 0.3 | |
| Delay (s) | | 36.6 | 42.2 | | 14.9 | 12.7 | | 4.1 | 2.5 | | 9.3 | |
| Level of Service | | D | D | | B | B | | A | A | | A | |
| Approach Delay (s) | | 37.0 | | | 14.8 | | | 4.0 | | | 9.3 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.6 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 63.5% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

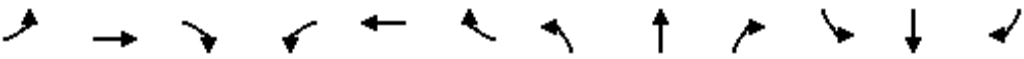
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 162 | 21 | 31 | 9 | 18 | 6 | 26 | 286 | 19 | 6 | 201 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1768 | 1390 | | 1813 | | | 1974 | | | 1873 | 1328 |
| Flt Permitted | | 0.80 | 1.00 | | 0.93 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1475 | 1390 | | 1711 | | | 1923 | | | 1859 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 180 | 23 | 34 | 10 | 20 | 7 | 29 | 318 | 21 | 7 | 223 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 20 | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 0 | 55 |
| Lane Group Flow (vph) | 0 | 203 | 14 | 0 | 32 | 0 | 0 | 364 | 0 | 0 | 230 | 54 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 649 | 577 | | 447 | | | 947 | | | 915 | 654 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.09 | 0.01 | | 0.02 | | | c0.19 | | | 0.12 | 0.04 |
| v/c Ratio | | 0.31 | 0.02 | | 0.07 | | | 0.38 | | | 0.25 | 0.08 |
| Uniform Delay, d1 | | 12.8 | 11.2 | | 18.1 | | | 10.3 | | | 9.6 | 8.7 |
| Progression Factor | | 0.77 | 1.28 | | 1.00 | | | 0.54 | | | 0.49 | 0.34 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.3 | | | 1.1 | | | 0.6 | 0.2 |
| Delay (s) | | 10.9 | 14.4 | | 18.4 | | | 6.7 | | | 5.3 | 3.2 |
| Level of Service | | B | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 11.4 | | | 18.4 | | | 6.7 | | | 4.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.5 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 59.4% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 793 | 222 | 259 | 1100 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4302 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.19 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4302 | | 322 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 835 | 234 | 273 | 1158 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 66 |
| Lane Group Flow (vph) | 0 | 1029 | 0 | 273 | 1158 | 0 | 0 | 0 | 0 | 234 | 387 | 144 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 50.6 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Effective Green, g (s) | | 50.6 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Actuated g/C Ratio | | 0.48 | | 0.66 | 0.66 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2073 | | 384 | 2129 | | | | | 320 | 612 | 306 |
| v/s Ratio Prot | | 0.24 | | c0.10 | 0.36 | | | | | | | |
| v/s Ratio Perm | | | | c0.37 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.50 | | 0.71 | 0.54 | | | | | 0.73 | 0.63 | 0.47 |
| Uniform Delay, d1 | | 18.5 | | 9.8 | 9.5 | | | | | 37.7 | 36.7 | 35.2 |
| Progression Factor | | 1.00 | | 1.35 | 1.53 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.9 | | 3.8 | 0.6 | | | | | 8.6 | 2.2 | 1.4 |
| Delay (s) | | 19.4 | | 17.0 | 15.1 | | | | | 46.3 | 39.0 | 36.6 |
| Level of Service | | B | | B | B | | | | | D | D | D |
| Approach Delay (s) | | 19.4 | | | 15.5 | | | 0.0 | | | 40.3 | |
| Approach LOS | | B | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 97.9% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 311 | 757 | 0 | 0 | 810 | 234 | 549 | 365 | 386 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4421 | | | | |
| Flt Permitted | 0.20 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 617 | 3138 | | | 3119 | 1449 | | 4421 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 797 | 0 | 0 | 853 | 246 | 578 | 384 | 406 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 111 | 0 | 71 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 797 | 0 | 0 | 853 | 135 | 0 | 1297 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | Perm | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.2 | 62.2 | | | 44.8 | 44.8 | | 30.8 | | | | |
| Effective Green, g (s) | 62.2 | 62.2 | | | 44.8 | 44.8 | | 30.8 | | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 615 | 1859 | | | 1331 | 618 | | 1297 | | | | |
| v/s Ratio Prot | c0.06 | 0.25 | | | c0.27 | | | | | | | |
| v/s Ratio Perm | 0.26 | | | | | 0.09 | | 0.29 | | | | |
| v/c Ratio | 0.53 | 0.43 | | | 0.64 | 0.22 | | 1.05dl | | | | |
| Uniform Delay, d1 | 12.6 | 11.7 | | | 23.8 | 19.0 | | 37.1 | | | | |
| Progression Factor | 0.72 | 0.86 | | | 0.96 | 1.43 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.6 | | | 1.6 | 0.5 | | 25.1 | | | | |
| Delay (s) | 10.0 | 10.6 | | | 24.3 | 27.8 | | 62.2 | | | | |
| Level of Service | B | B | | | C | C | | E | | | | |
| Approach Delay (s) | | 10.5 | | | 25.0 | | | 62.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.6 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | 18.0 | | | |
| Intersection Capacity Utilization | | | 97.9% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 105 | 449 | 226 | 78 | 751 | 41 | 226 | 178 | 40 | 37 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1601 | 3233 | | 1446 | 3008 | | 1544 | 2782 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.48 | 1.00 | | 0.52 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 238 | 3061 | 1291 | 811 | 3233 | | 789 | 3008 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 473 | 238 | 82 | 791 | 43 | 238 | 187 | 42 | 39 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 99 | 0 | 4 | 0 | 0 | 20 | 0 | 0 | 79 | 0 |
| Lane Group Flow (vph) | 111 | 473 | 139 | 82 | 830 | 0 | 238 | 209 | 0 | 39 | 134 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 61.9 | 51.9 | 61.4 | 39.3 | 32.8 | | 31.1 | 22.6 | | 23.1 | 18.1 | |
| Effective Green, g (s) | 61.9 | 51.9 | 61.4 | 39.3 | 32.8 | | 31.1 | 22.6 | | 23.1 | 18.1 | |
| Actuated g/C Ratio | 0.59 | 0.49 | 0.58 | 0.37 | 0.31 | | 0.30 | 0.22 | | 0.22 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 464 | 1513 | 755 | 352 | 1010 | | 293 | 647 | | 244 | 480 | |
| v/s Ratio Prot | c0.06 | c0.15 | 0.02 | 0.01 | c0.26 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.08 | | 0.09 | 0.07 | | | c0.17 | | | 0.03 | | |
| v/c Ratio | 0.24 | 0.31 | 0.18 | 0.23 | 0.82 | | 0.81 | 0.32 | | 0.16 | 0.28 | |
| Uniform Delay, d1 | 12.1 | 15.9 | 10.1 | 21.7 | 33.4 | | 32.8 | 34.7 | | 32.8 | 37.8 | |
| Progression Factor | 0.94 | 1.02 | 2.33 | 1.00 | 1.00 | | 0.92 | 0.86 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.4 | 0.1 | 0.3 | 7.5 | | 15.1 | 1.0 | | 0.3 | 1.1 | |
| Delay (s) | 12.4 | 16.7 | 23.7 | 22.0 | 40.9 | | 45.2 | 30.9 | | 33.1 | 38.9 | |
| Level of Service | B | B | C | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 18.1 | | | 39.2 | | | 38.2 | | | 38.0 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 132 | 286 | 56 | 166 | 102 | 329 | 382 | 63 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1634 | 2807 | | 1463 | 3015 | | 1589 | 3257 | | 1549 | 3135 | |
| Flt Permitted | 0.56 | 1.00 | | 0.41 | 1.00 | | 0.46 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 966 | 2807 | | 625 | 3015 | | 772 | 3257 | | 788 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 139 | 301 | 59 | 175 | 107 | 346 | 402 | 66 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 218 | 0 | 0 | 78 | 0 | 0 | 12 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 222 | 0 | 59 | 204 | 0 | 346 | 456 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.8 | 28.8 | | 35.8 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.8 | 28.8 | | 35.8 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 374 | 770 | | 269 | 827 | | 530 | 1300 | | 343 | 935 | |
| v/s Ratio Prot | 0.01 | c0.08 | | c0.01 | 0.07 | | c0.11 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.06 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.17 | 0.29 | | 0.22 | 0.25 | | 0.65 | 0.35 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 30.0 | | 23.9 | 29.7 | | 16.6 | 22.0 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.87 | |
| Incremental Delay, d2 | 0.3 | 0.9 | | 0.5 | 0.7 | | 3.0 | 0.7 | | 0.5 | 0.9 | |
| Delay (s) | 24.0 | 31.0 | | 24.4 | 30.4 | | 19.6 | 22.8 | | 22.8 | 26.0 | |
| Level of Service | C | C | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 30.1 | | | 29.3 | | | 21.4 | | | 25.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 66.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 169 | 402 | 81 | 6 | 409 | 110 | 68 | 602 | 7 | 84 | 326 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2890 | | | 2888 | | 1436 | 3186 | | 1451 | 2788 | |
| Flt Permitted | | 0.58 | | | 0.95 | | 0.41 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | | 1692 | | | 2733 | | 624 | 3186 | | 421 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 447 | 90 | 7 | 454 | 122 | 76 | 669 | 8 | 93 | 362 | 117 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 708 | 0 | 0 | 546 | 0 | 76 | 676 | 0 | 93 | 431 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 777 | | | 799 | | 300 | 1078 | | 232 | 944 | |
| v/s Ratio Prot | | c0.06 | | | | | 0.02 | c0.21 | | c0.02 | 0.15 | |
| v/s Ratio Perm | | c0.32 | | | 0.20 | | 0.09 | | | 0.14 | | |
| v/c Ratio | | 0.91 | | | 0.68 | | 0.25 | 0.63 | | 0.40 | 0.46 | |
| Uniform Delay, d1 | | 17.9 | | | 20.3 | | 12.4 | 18.1 | | 12.9 | 16.8 | |
| Progression Factor | | 1.00 | | | 1.57 | | 0.92 | 0.71 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 16.8 | | | 2.3 | | 1.8 | 2.5 | | 5.1 | 1.6 | |
| Delay (s) | | 34.6 | | | 34.3 | | 13.2 | 15.3 | | 18.0 | 18.4 | |
| Level of Service | | C | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 34.6 | | | 34.3 | | | 15.1 | | | 18.3 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 71.9% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 52 | 117 | 48 | 70 | 132 | 13 | 38 | 661 | 81 | 10 | 378 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1665 | 1857 | | 1612 | 1939 | | 1658 | 3211 | | 1138 | 3197 | |
| Flt Permitted | 0.66 | 1.00 | | 0.65 | 1.00 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | 1161 | 1857 | | 1102 | 1939 | | 870 | 3211 | | 366 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 121 | 49 | 72 | 136 | 13 | 39 | 681 | 84 | 10 | 390 | 46 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 5 | 0 | 0 | 15 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 54 | 147 | 0 | 72 | 144 | 0 | 39 | 750 | 0 | 10 | 422 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 429 | 686 | | 407 | 716 | | 415 | 1531 | | 175 | 1525 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | c0.23 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.07 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.13 | 0.21 | | 0.18 | 0.20 | | 0.09 | 0.49 | | 0.06 | 0.28 | |
| Uniform Delay, d1 | 13.6 | 14.0 | | 13.8 | 14.0 | | 9.3 | 11.6 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.72 | 1.77 | | 1.00 | 1.00 | | 0.49 | 0.49 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.4 | | 0.4 | 1.1 | | 0.5 | 0.4 | |
| Delay (s) | 14.2 | 14.8 | | 24.4 | 25.2 | | 9.8 | 12.7 | | 5.0 | 5.4 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 14.6 | | | 24.9 | | | 12.6 | | | 5.4 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 59.5% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|-------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 427 | 164 | 570 | 14 | 3 | 14 | 3 | 47 | 10 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | | 2958 | | | | 1732 | | | 1864 | | |
| Flt Permitted | 1.00 | | 0.67 | | | | 0.94 | | | 0.87 | | |
| Satd. Flow (perm) | 2956 | | 1998 | | | | 1650 | | | 1671 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 449 | 173 | 600 | 15 | 3 | 15 | 3 | 49 | 11 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 449 | 0 | 786 | 0 | 0 | 0 | 32 | 0 | 0 | 14 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | | Perm | Perm | | | Perm | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 919 | | | | 355 | | | 360 | | |
| v/s Ratio Prot | 0.15 | | c0.08 | | | | | | | | | |
| v/s Ratio Perm | | | c0.28 | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.55 | | 0.85 | | | | 0.09 | | | 0.04 | | |
| Uniform Delay, d1 | 20.0 | | 17.2 | | | | 20.4 | | | 20.2 | | |
| Progression Factor | 1.33 | | 0.75 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 1.4 | | 9.6 | | | | 0.5 | | | 0.2 | | |
| Delay (s) | 28.2 | | 22.4 | | | | 20.9 | | | 20.4 | | |
| Level of Service | C | | C | | | | C | | | C | | |
| Approach Delay (s) | 28.2 | | 22.4 | | | | 20.9 | | | 20.4 | | |
| Approach LOS | C | | C | | | | C | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 37.5 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 79.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

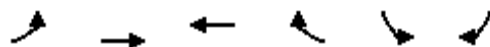


| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 224 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1430 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1430 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 236 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 237 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.17 | |
| v/s Ratio Perm | | |
| v/c Ratio | 1.08 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 1.07 | |
| Incremental Delay, d2 | 81.8 | |
| Delay (s) | 111.3 | |
| Level of Service | F | |
| Approach Delay (s) | 111.3 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|-------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 194 | 581 | 594 | 66 | 41 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3217 | 3208 | | 1629 | 1457 |
| Flt Permitted | | 0.63 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2042 | 3208 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 216 | 646 | 660 | 73 | 46 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 862 | 720 | 0 | 46 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1257 | 1974 | | 426 | 381 |
| v/s Ratio Prot | | | 0.22 | | 0.03 | |
| v/s Ratio Perm | | c0.42 | | | | c0.03 |
| v/c Ratio | | 0.69 | 0.36 | | 0.11 | 0.12 |
| Uniform Delay, d1 | | 8.3 | 6.2 | | 18.2 | 18.3 |
| Progression Factor | | 1.43 | 1.23 | | 0.93 | 0.87 |
| Incremental Delay, d2 | | 2.5 | 0.5 | | 0.5 | 0.6 |
| Delay (s) | | 14.3 | 8.1 | | 17.6 | 16.5 |
| Level of Service | | B | A | | B | B |
| Approach Delay (s) | | 14.3 | 8.1 | | 16.7 | |
| Approach LOS | | B | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 12.1 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.52 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 55.8% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|----------------------|-------|------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 53 | 542 | 598 | 196 | 135 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2927 | 2906 | | 1464 | 1373 |
| Flt Permitted | | 0.83 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2451 | 2906 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 571 | 629 | 206 | 142 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 0 | 627 | 786 | 0 | 142 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1433 | 1699 | | 428 | 401 |
| v/s Ratio Prot | | | c0.27 | | c0.10 | |
| v/s Ratio Perm | | 0.26 | | | | 0.01 |
| v/c Ratio | | 0.44 | 0.46 | | 0.33 | 0.04 |
| Uniform Delay, d1 | | 7.5 | 7.7 | | 18.0 | 16.5 |
| Progression Factor | | 0.57 | 0.54 | | 0.96 | 1.22 |
| Incremental Delay, d2 | | 0.7 | 0.7 | | 2.0 | 0.2 |
| Delay (s) | | 5.0 | 4.8 | | 19.4 | 20.4 |
| Level of Service | | A | A | | B | C |
| Approach Delay (s) | | 5.0 | 4.8 | | 19.6 | |
| Approach LOS | | A | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 6.7 | | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | 0.42 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 59.4% | | ICU Level of Service | | B |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 529 | 160 | 107 | 552 | 423 | 83 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.98 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2214 | | 1769 | 2436 | 1817 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2214 | | 244 | 2436 | 1817 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 588 | 178 | 119 | 613 | 470 | 92 |
| RTOR Reduction (vph) | 17 | 0 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 749 | 0 | 119 | 613 | 551 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1056 | | 116 | 1162 | 671 | |
| v/s Ratio Prot | 0.34 | | | 0.25 | c0.30 | |
| v/s Ratio Perm | | | c0.49 | | | |
| v/c Ratio | 0.71 | | 1.03 | 0.53 | 0.82 | |
| Uniform Delay, d1 | 13.4 | | 17.0 | 11.9 | 18.6 | |
| Progression Factor | 1.25 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.8 | | 90.7 | 1.7 | 10.9 | |
| Delay (s) | 20.6 | | 107.7 | 13.6 | 29.4 | |
| Level of Service | C | | F | B | C | |
| Approach Delay (s) | 20.6 | | | 28.9 | 29.4 | |
| Approach LOS | C | | | C | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 25.9 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.93 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 80.1% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

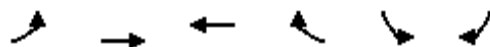
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 590 | 89 | 258 | 629 | 9 | 72 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.39 | 1.00 | 1.00 | 0.35 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.70 | |
| Satd. Flow (perm) | 764 | 3213 | 1422 | 584 | 3138 | 1366 | | 1309 | 1443 | | 719 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 656 | 99 | 287 | 699 | 10 | 80 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 40 | 0 | 0 | 2 | 0 | 0 | 182 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 656 | 59 | 287 | 699 | 8 | 0 | 80 | 26 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 50.8 | 50.8 | 50.8 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Effective Green, g (s) | 50.8 | 50.8 | 50.8 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Actuated g/C Ratio | 0.60 | 0.60 | 0.60 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 457 | 1920 | 850 | 605 | 2451 | 1067 | | 163 | 180 | | 90 | |
| v/s Ratio Prot | | 0.20 | | c0.07 | 0.22 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | c0.30 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.34 | 0.07 | 0.47 | 0.29 | 0.01 | | 0.49 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 6.9 | 8.6 | 7.2 | 3.0 | 2.6 | 2.0 | | 34.7 | 33.2 | | 32.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.5 | 0.2 | 0.6 | 0.1 | 0.0 | | 2.3 | 0.4 | | 0.0 | |
| Delay (s) | 6.9 | 9.1 | 7.3 | 3.6 | 2.7 | 2.1 | | 37.0 | 33.5 | | 32.7 | |
| Level of Service | A | A | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 8.9 | | | 2.9 | | | 34.5 | | | 32.7 | |
| Approach LOS | | A | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.6 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 47.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 816 | 838 | 45 | 24 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1487 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2835 | 3017 | | 1487 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 907 | 931 | 50 | 27 | 10 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 921 | 977 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1040 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.32 | | c0.02 | |
| v/s Ratio Perm | | c0.32 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.7 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.0 | 0.2 | | 4.8 | |
| Delay (s) | | 37.8 | 0.3 | | 43.8 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 37.8 | 0.3 | | 43.8 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 18.9 | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | 25.0 |
| Intersection Capacity Utilization | | | 44.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 75 | 426 | 1 | 14 | 550 | 80 | 0 | 0 | 1 | 45 | 3 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1729 | | | 3229 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.81 | | | 0.95 | | | 1.00 | | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1405 | | | 3069 | | | 1432 | | | 1569 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 473 | 1 | 16 | 611 | 89 | 0 | 0 | 1 | 50 | 3 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 58 |
| Lane Group Flow (vph) | 0 | 557 | 0 | 0 | 703 | 0 | 0 | 0 | 0 | 0 | 53 | 28 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 512 | | | 1651 | | | 152 | | | 469 | 422 |
| v/s Ratio Prot | | | | | 0.07 | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | 0.40 | | | 0.16 | | | | | | 0.01 | 0.02 |
| v/c Ratio | | 1.09 | | | 0.43 | | | 0.00 | | | 0.11 | 0.07 |
| Uniform Delay, d1 | | 27.0 | | | 12.1 | | | 34.0 | | | 21.9 | 19.5 |
| Progression Factor | | 1.00 | | | 1.73 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 65.7 | | | 0.1 | | | 0.0 | | | 0.5 | 0.3 |
| Delay (s) | | 92.7 | | | 21.0 | | | 34.0 | | | 22.4 | 19.9 |
| Level of Service | | F | | | C | | | C | | | C | B |
| Approach Delay (s) | | 92.7 | | | 21.0 | | | 34.0 | | | 20.8 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 71.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 27 | 35 | 1014 | 58 | 34 | 17 | 48 | 23 | 22 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.93 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3022 | | | 1787 | | | 1700 | |
| Flt Permitted | 0.17 | 1.00 | | 0.37 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 283 | 3022 | | 610 | 3022 | | | 1613 | | | 1628 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 41 | 623 | 28 | 36 | 1056 | 60 | 35 | 18 | 50 | 24 | 23 | 91 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 32 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 41 | 646 | 0 | 36 | 1110 | 0 | 0 | 71 | 0 | 0 | 116 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 148 | 1581 | | 319 | 1581 | | | 571 | | | 576 | |
| v/s Ratio Prot | | 0.21 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | | 0.04 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.11 | 0.70 | | | 0.12 | | | 0.20 | |
| Uniform Delay, d1 | 8.6 | 9.4 | | 7.9 | 11.7 | | | 14.2 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.69 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.6 | 0.8 | | 0.6 | 2.3 | | | 0.4 | | | 0.8 | |
| Delay (s) | 13.2 | 10.2 | | 6.1 | 18.8 | | | 14.6 | | | 15.4 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.4 | | | 14.6 | | | 15.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 41 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 43 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 24 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.08 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.1 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.84 | 0.86 | | 0.33 | 0.75 | 1.24 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.6 | 37.5 | | 5.1 | 12.2 | 16.6 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.2 | | | 0.0 | | | 55.2 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 340 | 815 | 220 | 54 | 578 | 287 | 102 | 251 | 55 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 608 | 302 | 107 | 264 | 58 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 228 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1072 | 0 | 57 | 608 | 74 | 0 | 371 | 16 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.63 | | 0.54 | 0.79 | 0.30 | | 0.52 | 0.06 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 22.0 | | 59.2 | 45.8 | 39.8 | | 45.1 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.95 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.7 | 8.0 | 3.0 | | 2.7 | 0.4 | 49.7 | | 0.4 |
| Delay (s) | 30.7 | 4.7 | | 77.9 | 53.8 | 42.8 | | 45.2 | 40.3 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 51.8 | | | 44.5 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 893 | 166 | 104 | 839 | 0 | 74 | 0 | 79 | 9 | 14 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1648 | 3149 | | 1387 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.19 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 336 | 3149 | | 1085 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 930 | 173 | 108 | 874 | 0 | 77 | 0 | 82 | 9 | 15 | 7 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1088 | 0 | 108 | 874 | 0 | 77 | 0 | 26 | 9 | 17 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 202 | 1889 | | 347 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | c0.36 | | | 0.28 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.32 | | | c0.07 | | 0.02 | | 0.00 | |
| v/c Ratio | | 0.61 | | 0.53 | 0.46 | | 0.22 | | 0.06 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 12.6 | | 11.8 | 11.1 | | 24.9 | | 23.5 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 9.8 | 0.8 | | 1.5 | | 0.2 | | 0.0 | 0.1 |
| Delay (s) | | 14.1 | | 21.6 | 11.9 | | 26.4 | | 23.8 | | 23.3 | 23.4 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.1 | | | 13.0 | | | 25.0 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|--------|---|---|---|--|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 300 | 0 | 1230 | 209 | 662 | 0 | 0 | 787 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4269 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 0 | 0 | 0 | 309 | 0 | 1268 | 215 | 682 | 0 | 0 | 811 | 505 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 309 | 0 | 1268 | 215 | 682 | 0 | 0 | 1316 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1260 | |
| v/s Ratio Prot | | | | 0.20 | | c0.83 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.68 | | 2.90 | 0.46 | 0.25 | | | 1.17dr | |
| Uniform Delay, d1 | | | | 32.6 | | 37.5 | 29.5 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.63 | 2.07 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.9 | | 862.0 | 2.7 | 0.2 | | | 37.8 | |
| Delay (s) | | | | 40.6 | | 899.5 | 21.4 | 18.0 | | | 74.8 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 731.2 | | | 18.8 | | | 74.8 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 334.6 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 101.6% | | | ICU Level of Service | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 144 | 0 | 0 | 0 | 0 | 549 | 408 | 359 | 728 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 339 | 811 | 152 | 0 | 0 | 0 | 0 | 578 | 429 | 378 | 766 | 0 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 305 | 984 | 0 | 0 | 0 | 0 | 0 | 578 | 429 | 378 | 766 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.13 | | c0.24 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.31 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.62 | 0.96 | | | | | | 0.50 | 0.72 | 0.80 | 0.28 | |
| Uniform Delay, d1 | 30.1 | 34.9 | | | | | | 32.5 | 34.9 | 34.2 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.87 | 0.23 | |
| Incremental Delay, d2 | 5.9 | 20.5 | | | | | | 1.4 | 6.5 | 5.4 | 0.1 | |
| Delay (s) | 36.0 | 55.4 | | | | | | 38.4 | 46.2 | 35.0 | 2.5 | |
| Level of Service | D | E | | | | | | D | D | D | A | |
| Approach Delay (s) | | 50.9 | | | 0.0 | | | 41.7 | | | 13.3 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.7 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 101.6% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013








| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 289 | 25 | 24 | 11 | 144 | 0 | 0 | 144 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3133 | | 1710 | 1846 | | | 1956 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.55 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3133 | | 998 | 1846 | | | 1956 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 304 | 26 | 25 | 12 | 152 | 0 | 0 | 152 | 5 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 304 | 34 | 0 | 12 | 152 | 0 | 0 | 156 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | | | | pm+pt | | | | | |
| Protected Phases | | | | | | | 8 | | | | | |
| Permitted Phases | 8 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | 27.0 | | | | | | 50.0 | | | | | |
| Effective Green, g (s) | 27.0 | | | | | | 50.0 | | | | | |
| Actuated g/C Ratio | 0.32 | | | | | | 0.59 | | | | | |
| Clearance Time (s) | 4.0 | | | | | | 4.0 | | | | | |
| Lane Grp Cap (vph) | 536 | | | | | | 1086 | | | | | |
| v/s Ratio Prot | | | | | | | 0.00 | | | | | |
| v/s Ratio Perm | c0.18 | | | | | | 0.01 | | | | | |
| v/c Ratio | 0.57 | | | | | | 0.14 | | | | | |
| Uniform Delay, d1 | 24.1 | | | | | | 7.9 | | | | | |
| Progression Factor | 1.00 | | | | | | 1.18 | | | | | |
| Incremental Delay, d2 | 4.3 | | | | | | 0.3 | | | | | |
| Delay (s) | 28.4 | | | | | | 9.5 | | | | | |
| Level of Service | C | | | | | | A | | | | | |
| Approach Delay (s) | 0.0 | | | | | | 9.6 | | | | | |
| Approach LOS | A | | | | | | A | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 19.0 | | | | | | HCM Level of Service | | | | | |
| HCM Volume to Capacity ratio | 0.27 | | | | | | B | | | | | |
| Actuated Cycle Length (s) | 85.0 | | | | | | Sum of lost time (s) | | | | | |
| Intersection Capacity Utilization | 36.9% | | | | | | 1.0 | | | | | |
| Analysis Period (min) | 15 | | | | | | ICU Level of Service | | | | | |
| A | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|------|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 12 | 11 | 23 | 3 | 0 | 14 | 0 | 129 | 33 | 46 | 387 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.89 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1729 | | | 1550 | | | 1725 | | 1590 | 1860 | |
| Flt Permitted | 0.75 | 1.00 | | | 0.98 | | | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 1517 | 1729 | | | 1533 | | | 1725 | | 1027 | 1860 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 12 | 26 | 3 | 0 | 16 | 0 | 143 | 37 | 51 | 430 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 8 | 0 | 0 | 169 | 0 | 51 | 430 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | | | | pm+pt | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 549 | | | 487 | | | 812 | | 650 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.10 | | 0.01 | c0.23 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.21 | | 0.08 | 0.39 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.2 | | 8.5 | 9.4 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.96 | 0.85 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | | 0.2 | 1.0 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 13.8 | | 8.3 | 9.0 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 13.8 | | | 8.9 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 41.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 48 | 41 | 10 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1753 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1753 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 46 | 11 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 0 | 11 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.02 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.5 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.46 | 0.61 | 1.43 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.1 | 5.0 | 12.7 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.9 | 12.7 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 29.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 30 | 268 | 9 | 258 | 122 | 0 | 0 | 281 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3773 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.49 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3773 | | 875 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 0 | 0 | 32 | 282 | 9 | 272 | 128 | 0 | 0 | 296 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 321 | 0 | 272 | 128 | 0 | 0 | 296 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 621 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.05 | 0.08 | | | 0.17 | |
| v/s Ratio Perm | | | | | | | c0.21 | | | | | 0.01 |
| v/c Ratio | | | | | 0.28 | | 0.44 | 0.13 | | | 0.38 | 0.01 |
| Uniform Delay, d1 | | | | | 22.4 | | 12.9 | 7.4 | | | 15.7 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.2 | 0.3 | | | 1.4 | 0.0 |
| Delay (s) | | | | | 23.0 | | 15.2 | 7.6 | | | 17.1 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.0 | | | 12.8 | | | 16.9 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.0% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

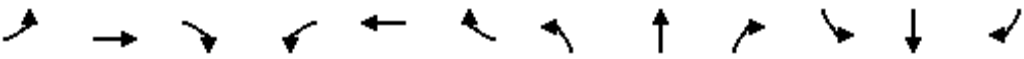
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 203 | 30 | 59 | 702 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3286 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 447 | 3286 | | 1063 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 106 | 104 | 42 | 148 | 226 | 33 | 66 | 780 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 242 | 0 | 148 | 244 | 0 | 66 | 823 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1490 | | 641 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.07 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.16 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.80 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 9.9 | | 8.5 | 15.9 | |
| Level of Service | | | | | C | | B | A | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.5 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 32 | 49 | 12 | 8 | 63 | 63 | 5 | 271 | 20 | 159 | 588 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1967 | | | 1654 | | 1595 | 3178 | | 1704 | 3231 | |
| Flt Permitted | | 0.88 | | | 0.99 | | 0.34 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1765 | | | 1638 | | 571 | 3178 | | 998 | 3231 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 54 | 13 | 9 | 70 | 70 | 6 | 301 | 22 | 177 | 653 | 56 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 43 | 0 | 0 | 7 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 96 | 0 | 0 | 106 | 0 | 6 | 316 | 0 | 177 | 701 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 588 | | | 546 | | 320 | 1780 | | 559 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.22 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.18 | | |
| v/c Ratio | | 0.16 | | | 0.19 | | 0.02 | 0.18 | | 0.32 | 0.39 | |
| Uniform Delay, d1 | | 17.6 | | | 17.8 | | 7.3 | 8.1 | | 8.8 | 9.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.8 | | 0.1 | 0.2 | | 1.3 | 0.5 | |
| Delay (s) | | 18.2 | | | 18.6 | | 7.4 | 8.3 | | 3.7 | 2.9 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.2 | | | 18.6 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.9 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 49.2% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 249 | 587 | 81 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 39 | 202 | 71 | 262 | 618 | 85 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 241 | 158 | 175 | 412 | 291 | |
| Volume Left (vph) | 39 | 71 | 0 | 0 | 0 | |
| Volume Right (vph) | 202 | 0 | 0 | 0 | 85 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.6 | 6.4 | 6.2 | 5.8 | 5.6 | |
| Degree Utilization, x | 0.38 | 0.28 | 0.30 | 0.66 | 0.45 | |
| Capacity (veh/h) | 600 | 538 | 557 | 612 | 633 | |
| Control Delay (s) | 12.0 | 10.7 | 10.6 | 18.0 | 11.8 | |
| Approach Delay (s) | 12.0 | 10.7 | | 15.5 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.6 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 53.8% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 371 | 18 | 18 | 385 | 66 | 74 | 55 | 68 | 354 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1611 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3253 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 937 | 1731 | 1421 | | | 257 | 3253 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 412 | 20 | 20 | 428 | 73 | 82 | 61 | 76 | 393 | 34 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 39 | 0 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 412 | 8 | 20 | 428 | 116 | 0 | 0 | 137 | 421 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 302 | 725 | 641 | 223 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.25 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.08 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.57 | 0.01 | 0.09 | 1.04 | 0.34 | | | 1.99 | 0.49 | |
| Uniform Delay, d1 | | 21.6 | 23.3 | 17.8 | 31.1 | 40.0 | 33.2 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.0 | 3.2 | 0.0 | 0.8 | 54.8 | 2.8 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.5 | 26.5 | 17.9 | 31.9 | 94.8 | 36.0 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.7 | | | 77.6 | | | | | 154.6 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 145.9 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 102.6% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 105 | 571 | 82 | 103 | 4 | 112 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 674 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 634 | 91 | 114 | 4 | 124 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 117 | 827 | 0 | 0 | 0 | 128 | 867 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 177 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.07 | | |
| v/s Ratio Perm | 0.17 | | | | | | c0.33 | |
| v/c Ratio | 0.66 | 0.97 | | | | 0.38 | 1.69 | |
| Uniform Delay, d1 | 34.6 | 38.4 | | | | 36.8 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 17.8 | 25.0 | | | | 3.3 | 317.6 | |
| Delay (s) | 52.4 | 63.4 | | | | 40.1 | 359.9 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 62.0 | | | | 319.8 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 590 | 0 | 0 | 451 | 50 | 85 | 52 | 17 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1954 | | | 1843 | | | | |
| Flt Permitted | | 0.91 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1544 | | | 1954 | | | 1843 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 68 | 621 | 0 | 0 | 475 | 53 | 89 | 55 | 18 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 689 | 0 | 0 | 528 | 0 | 0 | 162 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 950 | | | 1202 | | | 482 | | | | |
| v/s Ratio Prot | | | | | 0.27 | | | | | | | |
| v/s Ratio Perm | | 0.45 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.73 | | | 0.44 | | | 0.34 | | | | |
| Uniform Delay, d1 | | 8.7 | | | 6.6 | | | 19.4 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.8 | | | 1.2 | | | 1.9 | | | | |
| Delay (s) | | 13.5 | | | 7.8 | | | 21.3 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 13.5 | | | 7.8 | | | 21.3 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 83.8% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  | |
| Volume (vph) | 71 | 326 | 152 | 117 | 307 | 125 | 105 | 639 | 84 | 137 | 759 | 94 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 | |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | | 1981 | 1434 | | 1945 | 1444 | 1546 | 3040 | 1296 | 1506 | 3069 | 1252 | |
| Flt Permitted | | 0.43 | 1.00 | | 0.73 | 1.00 | 0.23 | 1.00 | 1.00 | 0.29 | 1.00 | 1.00 | |
| Satd. Flow (perm) | | 860 | 1434 | | 1445 | 1444 | 373 | 3040 | 1296 | 455 | 3069 | 1252 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | |
| Adj. Flow (vph) | 75 | 343 | 160 | 123 | 323 | 132 | 111 | 673 | 88 | 144 | 799 | 99 | |
| RTOR Reduction (vph) | 0 | 0 | 94 | 0 | 0 | 94 | 0 | 0 | 53 | 0 | 0 | 49 | |
| Lane Group Flow (vph) | 0 | 418 | 66 | 0 | 446 | 38 | 111 | 673 | 35 | 144 | 799 | 50 | |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% | |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 | |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 459 | 587 | | 413 | 413 | 272 | 1225 | 522 | 310 | 1248 | 509 | |
| v/s Ratio Prot | | c0.09 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | | |
| v/s Ratio Perm | | 0.29 | 0.05 | | c0.31 | 0.03 | 0.16 | | 0.03 | 0.19 | | 0.04 | |
| v/c Ratio | | 0.91 | 0.11 | | 1.08 | 0.09 | 0.41 | 0.55 | 0.07 | 0.46 | 0.64 | 0.10 | |
| Uniform Delay, d1 | | 29.2 | 19.2 | | 37.5 | 27.5 | 16.4 | 24.0 | 19.2 | 16.0 | 25.0 | 19.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.75 | 1.54 | 2.62 | |
| Incremental Delay, d2 | | 24.7 | 0.4 | | 67.4 | 0.4 | 1.0 | 1.8 | 0.3 | 1.1 | 2.4 | 0.4 | |
| Delay (s) | | 53.9 | 19.6 | | 104.9 | 27.9 | 17.4 | 25.8 | 19.5 | 29.0 | 41.0 | 50.9 | |
| Level of Service | | D | B | | F | C | B | C | B | C | D | D | |
| Approach Delay (s) | | 44.4 | | | 87.3 | | | 24.1 | | | 40.2 | | |
| Approach LOS | | D | | | F | | | C | | | D | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.3 | | | | | | | | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | | | | | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 87.8% | | | | | | | | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 399 | 85 | 94 | 444 | 94 | 51 | 61 | 69 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1643 | | | 1643 | | | 1798 | | | | |
| Flt Permitted | | 0.84 | | | 0.85 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1392 | | | 1406 | | | 1798 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 89 | 420 | 89 | 99 | 467 | 99 | 54 | 64 | 73 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 588 | 0 | 0 | 655 | 0 | 0 | 157 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 857 | | | 865 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.42 | | | 0.47 | | | 0.09 | | | | |
| v/c Ratio | | 0.69 | | | 0.76 | | | 0.33 | | | | |
| Uniform Delay, d1 | | 8.3 | | | 9.0 | | | 19.4 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.5 | | | 6.2 | | | 1.9 | | | | |
| Delay (s) | | 12.8 | | | 15.2 | | | 21.3 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 12.8 | | | 15.2 | | | 21.3 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 65.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 21 | 439 | 73 | 76 | 511 | 37 | 37 | 76 | 72 | 54 | 238 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1686 | 1455 | | 1887 | |
| Flt Permitted | | 0.97 | 1.00 | | 0.89 | 1.00 | | 0.84 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1634 | 1382 | | 1533 | 1417 | | 1432 | 1455 | | 1779 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 462 | 77 | 80 | 538 | 39 | 39 | 80 | 76 | 57 | 251 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 33 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 44 | 0 | 618 | 27 | 0 | 119 | 24 | 0 | 350 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 937 | 792 | | 879 | 812 | | 458 | 466 | | 569 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.30 | 0.03 | | c0.40 | 0.02 | | 0.08 | 0.02 | | c0.20 | |
| v/c Ratio | | 0.52 | 0.06 | | 0.70 | 0.03 | | 0.26 | 0.05 | | 0.61 | |
| Uniform Delay, d1 | | 9.7 | 7.1 | | 11.4 | 7.0 | | 18.9 | 17.6 | | 21.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.0 | 0.1 | | 4.7 | 0.1 | | 1.4 | 0.2 | | 4.9 | |
| Delay (s) | | 11.7 | 7.2 | | 16.1 | 7.0 | | 20.3 | 17.8 | | 26.5 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 11.1 | | | 15.6 | | | 19.3 | | | 26.5 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.8 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.67 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 94.9% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 57 | 443 | 30 | 45 | 525 | 54 | 44 | 165 | 55 | 123 | 210 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1531 | 3066 | | 1651 | 3728 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.38 | 1.00 | | 0.44 | 1.00 | | 0.59 | 1.00 | 1.00 | 0.64 | 1.00 | 1.00 |
| Satd. Flow (perm) | 604 | 3066 | | 769 | 3728 | | 977 | 1663 | 1370 | 1061 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 466 | 32 | 47 | 553 | 57 | 46 | 174 | 58 | 129 | 221 | 34 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 35 | 0 | 0 | 20 |
| Lane Group Flow (vph) | 60 | 490 | 0 | 47 | 598 | 0 | 46 | 174 | 23 | 129 | 221 | 14 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 288 | 1462 | | 367 | 1778 | | 391 | 665 | 548 | 424 | 672 | 559 |
| v/s Ratio Prot | | 0.16 | | | c0.16 | | | 0.10 | | | c0.13 | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | 0.05 | | 0.02 | 0.12 | | 0.01 |
| v/c Ratio | 0.21 | 0.34 | | 0.13 | 0.34 | | 0.12 | 0.26 | 0.04 | 0.30 | 0.33 | 0.02 |
| Uniform Delay, d1 | 9.9 | 10.6 | | 9.5 | 10.6 | | 12.3 | 13.1 | 11.9 | 13.3 | 13.5 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.86 | 0.91 | 0.80 | 0.55 | 0.56 | 0.25 |
| Incremental Delay, d2 | 1.6 | 0.6 | | 0.7 | 0.5 | | 0.6 | 1.0 | 0.1 | 1.8 | 1.3 | 0.1 |
| Delay (s) | 11.5 | 11.2 | | 10.2 | 11.1 | | 11.2 | 12.9 | 9.6 | 9.1 | 8.8 | 3.0 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.2 | | | 11.0 | | | 11.9 | | | 8.4 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 389 | 71 | 73 | 387 | 67 | 55 | 180 | 64 | 89 | 245 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.95 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1327 | 3143 | | 1513 | 3126 | | 1579 | 2919 | | 1451 | 3002 | |
| Flt Permitted | 0.45 | 1.00 | | 0.45 | 1.00 | | 0.54 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 634 | 3143 | | 717 | 3126 | | 895 | 2919 | | 910 | 3002 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 52 | 401 | 73 | 75 | 399 | 69 | 57 | 186 | 66 | 92 | 253 | 79 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 52 | 474 | 0 | 75 | 468 | 0 | 57 | 213 | 0 | 92 | 293 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 304 | 1509 | | 344 | 1500 | | 370 | 1207 | | 376 | 1241 | |
| v/s Ratio Prot | c0.15 | | | 0.15 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.08 | | | 0.10 | | | 0.06 | | | c0.10 | | |
| v/c Ratio | 0.17 | 0.31 | | 0.22 | 0.31 | | 0.15 | 0.18 | | 0.24 | 0.24 | |
| Uniform Delay, d1 | 11.0 | 11.9 | | 11.3 | 11.9 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.2 | 0.5 | | 1.5 | 0.5 | | 0.9 | 0.3 | | 1.5 | 0.4 | |
| Delay (s) | 12.3 | 12.5 | | 12.8 | 12.5 | | 14.7 | 14.2 | | 15.9 | 14.7 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.5 | | | 12.5 | | | 14.3 | | | 15.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.28 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 50.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 88 | 431 | 58 | 32 | 519 | 48 | 85 | 203 | 60 | 76 | 473 | 106 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1654 | | 1369 | 1973 | | 1534 | 2998 | | 1535 | 3016 | |
| Flt Permitted | 0.24 | 1.00 | | 0.32 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 411 | 1654 | | 464 | 1973 | | 457 | 2998 | | 939 | 3016 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 93 | 454 | 61 | 34 | 546 | 51 | 89 | 214 | 63 | 80 | 498 | 112 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 93 | 515 | 0 | 34 | 597 | 0 | 89 | 277 | 0 | 80 | 610 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 44.0 | 39.4 | | 40.8 | 37.8 | | 26.6 | 21.8 | | 26.6 | 21.8 | |
| Effective Green, g (s) | 44.0 | 37.4 | | 40.8 | 35.8 | | 26.6 | 19.8 | | 26.6 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 277 | 728 | | 255 | 831 | | 204 | 698 | | 328 | 703 | |
| v/s Ratio Prot | c0.02 | c0.31 | | 0.00 | 0.30 | | c0.02 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.16 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.34 | 0.71 | | 0.13 | 0.72 | | 0.44 | 0.40 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 23.0 | 19.4 | | 19.6 | 20.4 | | 29.1 | 27.6 | | 21.9 | 31.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.7 | 5.7 | | 0.2 | 5.3 | | 1.5 | 1.7 | | 0.4 | 13.7 | |
| Delay (s) | 23.7 | 25.1 | | 19.8 | 25.7 | | 30.6 | 29.2 | | 22.3 | 45.0 | |
| Level of Service | C | C | | B | C | | C | C | | C | D | |
| Approach Delay (s) | | 24.9 | | | 25.4 | | | 29.6 | | | 42.4 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 78.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↕ | ↕↕ | | ↕ | ↕↕ | |
| Volume (vph) | 73 | 389 | 63 | 117 | 508 | 118 | 66 | 158 | 58 | 127 | 367 | 81 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3682 | | | 3131 | | 1652 | 3236 | | 1549 | 3028 | |
| Flt Permitted | | 0.74 | | | 0.75 | | 0.44 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | | 2746 | | | 2356 | | 769 | 3236 | | 995 | 3028 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 77 | 409 | 66 | 123 | 535 | 124 | 69 | 166 | 61 | 134 | 386 | 85 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 552 | 0 | 0 | 782 | 0 | 69 | 227 | 0 | 134 | 471 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1245 | | | 1068 | | 338 | 1424 | | 438 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.20 | | | c0.33 | | 0.09 | | | 0.13 | | |
| v/c Ratio | | 0.44 | | | 0.73 | | 0.20 | 0.16 | | 0.31 | 0.35 | |
| Uniform Delay, d1 | | 14.0 | | | 16.8 | | 12.9 | 12.6 | | 13.6 | 13.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 4.4 | | 1.4 | 0.2 | | 1.8 | 0.7 | |
| Delay (s) | | 15.2 | | | 21.2 | | 14.3 | 12.9 | | 15.4 | 14.7 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.2 | | | 21.2 | | | 13.2 | | | 14.8 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.55 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 72.9% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 867 | 6 | 20 | 583 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3207 | | 1660 | 3320 | 1485 | | 1548 | | | 3176 | |
| Flt Permitted | 0.40 | 1.00 | | 0.27 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 680 | 3207 | | 475 | 3320 | 1485 | | 1520 | | | 2537 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 913 | 6 | 21 | 614 | 262 | 1 | 1 | 9 | 224 | 1 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 7 | 0 | 0 | 53 | 0 |
| Lane Group Flow (vph) | 103 | 919 | 0 | 21 | 614 | 166 | 0 | 4 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 431 | 2034 | | 301 | 2105 | 942 | | 389 | | | 649 | |
| v/s Ratio Prot | c0.29 | | | 0.18 | | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.04 | | 0.11 | | 0.00 | | | c0.10 | |
| v/c Ratio | 0.24 | 0.45 | | 0.07 | 0.29 | 0.18 | | 0.01 | | | 0.39 | |
| Uniform Delay, d1 | 5.7 | 6.8 | | 5.1 | 6.0 | 5.5 | | 20.2 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.3 | 0.7 | | 0.4 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.0 | 7.5 | | 5.5 | 6.3 | 5.9 | | 20.2 | | | 24.1 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 7.5 | | | 6.2 | | | | 20.2 | | | 24.1 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.3 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.44 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 72.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.0% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 122 | 94 | 163 | 55 | 134 | 907 | 90 | 123 | 825 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1506 | | 1563 | 1586 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.21 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 746 | 1506 | | 348 | 1586 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 128 | 99 | 172 | 58 | 141 | 955 | 95 | 129 | 868 | 99 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 14 | 0 | 0 | 0 | 40 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 138 | 346 | 0 | 99 | 216 | 0 | 141 | 955 | 55 | 129 | 868 | 53 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 286 | 390 | | 192 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.04 | c0.31 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.24 | | 0.04 | 0.24 | | 0.04 |
| v/c Ratio | 0.48 | 0.89 | | 0.52 | 0.53 | | 0.61 | 0.76 | 0.10 | 0.61 | 0.68 | 0.10 |
| Uniform Delay, d1 | 22.6 | 30.3 | | 22.8 | 27.0 | | 14.5 | 21.3 | 15.3 | 14.9 | 20.4 | 15.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.64 | 0.79 | 0.52 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.7 | 24.4 | | 9.6 | 4.8 | | 10.3 | 3.9 | 0.3 | 12.1 | 2.9 | 0.4 |
| Delay (s) | 28.4 | 54.7 | | 32.4 | 31.8 | | 19.6 | 20.7 | 8.3 | 27.1 | 23.4 | 15.7 |
| Level of Service | C | D | | C | C | | B | C | A | C | C | B |
| Approach Delay (s) | | 47.5 | | | 32.0 | | | 19.6 | | | 23.1 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 34 | 20 | 173 | 20 | 23 | 149 | 40 | 37 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1840 | | | 1851 | | | 1939 | | | 1976 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.95 | | | 0.95 | |
| Satd. Flow (perm) | | 1785 | | | 1793 | | | 1848 | | | 1893 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 23 | 191 | 36 | 21 | 182 | 21 | 24 | 157 | 42 | 39 | 268 | 53 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 241 | 0 | 0 | 218 | 0 | 0 | 210 | 0 | 0 | 350 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 741 | | | 745 | | | 853 | | | 874 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.25 | | | 0.40 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.6 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.65 | | | 1.15 | | | 1.00 | |
| Incremental Delay, d2 | | 1.2 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 9.3 | | | 12.9 | | | 12.9 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 9.3 | | | 12.9 | | | 12.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.36 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 51.0% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 36 | 25 | 180 | 18 | 39 | 200 | 31 | 39 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1495 | 3063 | | 1576 | 3122 | | 1518 | 3118 | | 1550 | 3075 | |
| Flt Permitted | 0.62 | 1.00 | | 0.60 | 1.00 | | 0.59 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 978 | 3063 | | 999 | 3122 | | 939 | 3118 | | 979 | 3075 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 25 | 203 | 38 | 26 | 189 | 19 | 41 | 211 | 33 | 41 | 225 | 41 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 25 | 218 | 0 | 26 | 196 | 0 | 41 | 230 | 0 | 41 | 249 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 286 | 895 | | 292 | 913 | | 549 | 1823 | | 572 | 1798 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | 0.07 | | | c0.08 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.04 | | | 0.04 | | |
| v/c Ratio | 0.09 | 0.24 | | 0.09 | 0.21 | | 0.07 | 0.13 | | 0.07 | 0.14 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.7 | 17.4 | | 5.9 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.89 | 0.91 | | 0.73 | 0.72 | | 1.25 | 1.26 | | 0.38 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.6 | 0.5 | | 0.3 | 0.1 | | 0.2 | 0.2 | |
| Delay (s) | 15.4 | 16.6 | | 12.8 | 13.0 | | 7.6 | 7.7 | | 2.4 | 2.2 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 16.5 | | | 13.0 | | | 7.7 | | | 2.2 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.4 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.17 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 41 | 25 | 159 | 36 | 23 | 247 | 16 | 30 | 322 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3058 | | 1524 | 2941 | | | 1923 | | | 1938 | |
| Flt Permitted | 0.63 | 1.00 | | 0.62 | 1.00 | | | 0.96 | | | 0.96 | |
| Satd. Flow (perm) | 1026 | 3058 | | 992 | 2941 | | | 1853 | | | 1874 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 68 | 171 | 42 | 26 | 162 | 37 | 23 | 252 | 16 | 31 | 329 | 34 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 22 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 188 | 0 | 26 | 177 | 0 | 0 | 288 | 0 | 0 | 389 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 410 | 1223 | | 397 | 1176 | | | 884 | | | 894 | |
| v/s Ratio Prot | 0.06 | | | 0.06 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.16 | | | c0.21 | | |
| v/c Ratio | 0.17 | 0.15 | | 0.07 | 0.15 | | | 0.33 | | | 0.43 | |
| Uniform Delay, d1 | 12.5 | 12.5 | | 12.0 | 12.4 | | | 10.5 | | | 11.2 | |
| Progression Factor | 1.01 | 0.94 | | 0.77 | 0.76 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.3 | 0.3 | | | 1.0 | | | 1.5 | |
| Delay (s) | 13.5 | 12.0 | | 9.5 | 9.7 | | | 11.3 | | | 12.8 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 12.4 | | | 9.7 | | | 11.3 | | | 12.8 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.7% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 47 | 111 | 26 | 20 | 161 | 26 | 31 | 235 | 11 | 29 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1973 | | 1583 | 1977 | | | 1983 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.66 | 1.00 | | | 0.93 | | | 0.97 | |
| Satd. Flow (perm) | 989 | 1973 | | 1092 | 1977 | | | 1850 | | | 1925 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 29 | 22 | 179 | 29 | 34 | 261 | 12 | 32 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 152 | 0 | 22 | 208 | 0 | 0 | 307 | 0 | 0 | 499 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 304 | 607 | | 336 | 608 | | | 1053 | | | 1096 | |
| v/s Ratio Prot | 0.08 | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.17 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.07 | 0.34 | | | 0.29 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.2 | | | 8.1 | |
| Progression Factor | 0.81 | 0.79 | | 0.93 | 0.92 | | | 0.97 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.7 | | | 1.4 | |
| Delay (s) | 14.5 | 14.3 | | 15.1 | 17.6 | | | 7.7 | | | 9.5 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 14.4 | | | 17.3 | | | 7.7 | | | 9.5 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 56.8% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 96 | 2 | 5 | 9 | 58 | 235 | 5 | 3 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1815 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1333 | 1727 | | 1217 | 1815 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 107 | 2 | 6 | 10 | 64 | 261 | 6 | 3 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 77 | 0 | 0 | 7 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 64 | 261 | 4 | 3 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 503 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.00 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.00 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.16 | 0.26 | 0.00 | 0.00 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.41 | 2.79 | | 1.00 | 1.00 | | 0.79 | 0.73 | 0.88 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 26.0 | 49.0 | | 17.1 | 17.1 | | 5.2 | 5.1 | 4.6 | 5.2 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 41.4 | | | 17.1 | | | 5.1 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 251 | 163 | 158 | 196 | 0 | 0 | 0 | 0 | 109 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2904 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2904 | | 725 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 264 | 172 | 166 | 206 | 0 | 0 | 0 | 0 | 115 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 330 | 0 | 166 | 206 | 0 | 0 | 0 | 0 | 115 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 567 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.11 | | c0.06 | 0.06 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.09 | | | | | | | | |
| v/c Ratio | | 0.35 | | 0.29 | 0.11 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.3 | | 13.3 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.14 | 2.09 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 1.2 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 29.6 | 23.2 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 26.1 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 219 | 0 | 0 | 277 | 109 | 77 | 539 | 227 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2844 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.39 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 686 | 3196 | | | 2844 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 231 | 0 | 0 | 292 | 115 | 81 | 567 | 239 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 164 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 231 | 0 | 0 | 366 | 0 | 81 | 567 | 75 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 716 | 1974 | | | 725 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.13 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.50 | | 0.16 | 1.08 | 0.16 | | | |
| Uniform Delay, d1 | 10.2 | 8.0 | | | 32.5 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.43 | 0.44 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 2.5 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 5.0 | 3.6 | | | 35.0 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | C | | C | F | C | | | |
| Approach Delay (s) | | 4.2 | | | 35.0 | | | 73.4 | | | 0.0 | |
| Approach LOS | | A | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.4 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 510 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 9 | 432 | 269 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3097 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3097 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 537 | 504 | 85 | 562 | 0 | 0 | 0 | 0 | 9 | 455 | 283 |
| RTOR Reduction (vph) | 0 | 170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 187 |
| Lane Group Flow (vph) | 0 | 871 | 0 | 85 | 562 | 0 | 0 | 0 | 0 | 9 | 455 | 96 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.06 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.78 | | 0.22 | 0.29 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 28.5 | | 14.5 | 10.6 | | | | | 21.9 | 25.4 | 23.2 |
| Progression Factor | | 1.00 | | 1.01 | 1.18 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.5 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 34.0 | | 15.5 | 12.8 | | | | | 22.0 | 26.6 | 24.0 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 34.0 | | | 13.2 | | | 0.0 | | | 25.6 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.3% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 415 | 104 | 0 | 0 | 150 | 5 | 465 | 479 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3174 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 986 | 2282 | | | 3174 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 437 | 109 | 0 | 0 | 158 | 5 | 489 | 504 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 218 | 328 | 0 | 0 | 160 | 0 | 489 | 504 | 23 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 677 | 1462 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.12 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.34 | | 0.85 | 0.82 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.6 | | | 38.0 | | 29.0 | 28.5 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 14.6 | 11.9 | 0.1 | | | |
| Delay (s) | 4.1 | 3.6 | | | 40.0 | | 43.6 | 40.5 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.8 | | | 40.0 | | | 40.7 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.2 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.3% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 78 | 211 | 103 | 109 | 241 | 111 | 84 | 699 | 76 | 100 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2936 | | | 2924 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.76 | | | 0.75 | | 0.16 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2259 | | | 2233 | | 261 | 3069 | 1309 | 407 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 80 | 218 | 106 | 112 | 248 | 114 | 87 | 721 | 78 | 103 | 911 | 67 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 36 | 0 | 0 | 0 | 48 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 362 | 0 | 0 | 438 | 0 | 87 | 721 | 30 | 103 | 911 | 34 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1005 | | | 736 | | 169 | 1210 | 508 | 224 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.23 | | 0.02 | c0.29 | |
| v/s Ratio Perm | | 0.13 | | | c0.20 | | 0.19 | | 0.02 | 0.17 | | 0.03 |
| v/c Ratio | | 0.36 | | | 0.60 | | 0.51 | 0.60 | 0.06 | 0.46 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.7 | | | 23.8 | | 16.6 | 20.4 | 16.3 | 15.9 | 22.1 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.35 | 0.68 | 0.62 | 1.11 | 1.17 | 1.76 |
| Incremental Delay, d2 | | 1.0 | | | 3.5 | | 10.1 | 2.0 | 0.2 | 4.8 | 3.0 | 0.2 |
| Delay (s) | | 17.7 | | | 27.3 | | 32.5 | 15.9 | 10.3 | 22.4 | 28.8 | 28.9 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 17.7 | | | 27.3 | | | 17.1 | | | 28.2 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 72.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 305 | 0 | 0 | 339 | 84 | 53 | 44 | 33 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1730 | | | 1701 | | | 1654 | | | | |
| Flt Permitted | | 0.85 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1493 | | | 1701 | | | 1654 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 80 | 321 | 0 | 0 | 357 | 88 | 56 | 46 | 35 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 401 | 0 | 0 | 431 | 0 | 0 | 118 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 873 | | | 994 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.25 | | | | | | | |
| v/s Ratio Perm | | c0.27 | | | | | | 0.07 | | | | |
| v/c Ratio | | 0.46 | | | 0.43 | | | 0.24 | | | | |
| Uniform Delay, d1 | | 7.7 | | | 7.5 | | | 17.5 | | | | |
| Progression Factor | | 1.00 | | | 0.65 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.7 | | | 1.2 | | | 1.2 | | | | |
| Delay (s) | | 9.4 | | | 6.1 | | | 18.7 | | | | |
| Level of Service | | A | | | A | | | B | | | | |
| Approach Delay (s) | | 9.4 | | | 6.1 | | | 18.7 | | | 0.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.2 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 19 | 289 | 27 | 39 | 347 | 50 | 28 | 118 | 39 | 53 | 150 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1956 | | | 1938 | | | 2969 | | | 2988 | |
| Flt Permitted | | 0.97 | | | 0.95 | | | 0.90 | | | 0.86 | |
| Satd. Flow (perm) | | 1899 | | | 1846 | | | 2679 | | | 2606 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 20 | 304 | 28 | 41 | 365 | 53 | 29 | 124 | 41 | 56 | 158 | 44 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 24 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 347 | 0 | 0 | 452 | 0 | 0 | 170 | 0 | 0 | 232 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 876 | | | 852 | | | 1113 | | | 1082 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.18 | | | 0.24 | | | 0.06 | | | 0.09 | |
| v/c Ratio | | 0.40 | | | 0.53 | | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | | 11.5 | | | 12.5 | | | 11.9 | | | 12.2 | |
| Progression Factor | | 0.58 | | | 0.41 | | | 1.06 | | | 0.43 | |
| Incremental Delay, d2 | | 1.2 | | | 2.1 | | | 0.3 | | | 0.4 | |
| Delay (s) | | 7.9 | | | 7.3 | | | 12.9 | | | 5.6 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 7.9 | | | 7.3 | | | 12.9 | | | 5.6 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 8.0 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.38 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.1% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 255 | 39 | 81 | 448 | 86 | 43 | 219 | 98 | 83 | 227 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3033 | | 1568 | 3074 | | 1587 | 2962 | | 1585 | 3076 | |
| Flt Permitted | 0.35 | 1.00 | | 0.56 | 1.00 | | 0.57 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 558 | 3033 | | 919 | 3074 | | 946 | 2962 | | 918 | 3076 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 43 | 268 | 41 | 85 | 472 | 91 | 45 | 231 | 103 | 87 | 239 | 65 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 24 | 0 | 0 | 48 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 43 | 290 | 0 | 85 | 539 | 0 | 45 | 286 | 0 | 87 | 274 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 189 | 1027 | | 311 | 1040 | | 509 | 1595 | | 494 | 1656 | |
| v/s Ratio Prot | | 0.10 | | | c0.18 | | | c0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.08 | | | 0.09 | | | 0.05 | | | 0.09 | | |
| v/c Ratio | 0.23 | 0.28 | | 0.27 | 0.52 | | 0.09 | 0.18 | | 0.18 | 0.17 | |
| Uniform Delay, d1 | 15.4 | 15.7 | | 15.7 | 17.2 | | 7.3 | 7.7 | | 7.6 | 7.6 | |
| Progression Factor | 0.79 | 0.76 | | 0.91 | 0.92 | | 0.82 | 0.81 | | 1.07 | 1.07 | |
| Incremental Delay, d2 | 2.7 | 0.7 | | 2.1 | 1.8 | | 0.3 | 0.2 | | 0.8 | 0.2 | |
| Delay (s) | 14.8 | 12.6 | | 16.4 | 17.7 | | 6.3 | 6.4 | | 9.0 | 8.4 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.9 | | | 17.5 | | | 6.4 | | | 8.5 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.31 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.1% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 68 | 87 | 401 | 50 | 44 | 231 | 58 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1508 | 3013 | | 1429 | 3720 | | | 3485 | | | 3521 | |
| Flt Permitted | 0.46 | 1.00 | | 0.53 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 726 | 3013 | | 792 | 3720 | | | 3042 | | | 3120 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 58 | 302 | 72 | 92 | 422 | 53 | 46 | 243 | 61 | 48 | 294 | 67 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 15 | 0 | 0 | 28 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 58 | 342 | 0 | 92 | 460 | 0 | 0 | 322 | 0 | 0 | 384 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 346 | 1437 | | 378 | 1774 | | | 1217 | | | 1248 | |
| v/s Ratio Prot | | 0.11 | | | c0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.12 | | | | 0.11 | | | c0.12 | |
| v/c Ratio | 0.17 | 0.24 | | 0.24 | 0.26 | | | 0.26 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.0 | | 10.1 | 10.1 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.52 | 1.66 | | 1.12 | 1.12 | | | 0.47 | | | 0.68 | |
| Incremental Delay, d2 | 1.0 | 0.4 | | 1.4 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 15.8 | 17.0 | | 12.7 | 11.7 | | | 6.7 | | | 9.7 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 16.8 | | | 11.9 | | | 6.7 | | | 9.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 11.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.28 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.4% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  | |
| Volume (vph) | 82 | 246 | 82 | 92 | 279 | 92 | 118 | 82 | 47 | 47 | 82 | 118 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1669 | 1436 | | 3083 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.81 | | | 0.69 | | | 0.91 | |
| Satd. Flow (perm) | | 1342 | 1436 | | 2535 | | | 1338 | | | 1680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 86 | 259 | 86 | 97 | 294 | 97 | 124 | 86 | 49 | 49 | 86 | 124 |
| RTOR Reduction (vph) | 0 | 0 | 41 | 0 | 33 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 345 | 45 | 0 | 455 | 0 | 0 | 246 | 0 | 0 | 208 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 702 | 751 | | 1326 | | | 432 | | | 543 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.26 | 0.03 | | 0.18 | | | c0.18 | | | 0.12 | |
| v/c Ratio | | 0.49 | 0.06 | | 0.34 | | | 0.57 | | | 0.38 | |
| Uniform Delay, d1 | | 10.0 | 7.6 | | 9.0 | | | 18.3 | | | 17.0 | |
| Progression Factor | | 1.82 | 4.36 | | 0.51 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.4 | 0.1 | | 0.7 | | | 5.4 | | | 2.0 | |
| Delay (s) | | 20.5 | 33.4 | | 5.3 | | | 23.6 | | | 19.0 | |
| Level of Service | | C | C | | A | | | C | | | B | |
| Approach Delay (s) | | 23.1 | | | 5.3 | | | 23.6 | | | 19.0 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 76.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 45 | 253 | 18 | 26 | 317 | 60 | 24 | 133 | 47 | 62 | 146 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3037 | | 1563 | 3017 | | | 3582 | | | 3605 | |
| Flt Permitted | 0.51 | 1.00 | | 0.58 | 1.00 | | | 0.91 | | | 0.85 | |
| Satd. Flow (perm) | 771 | 3037 | | 949 | 3017 | | | 3268 | | | 3094 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 47 | 266 | 19 | 27 | 334 | 63 | 25 | 140 | 49 | 65 | 154 | 64 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 24 | 0 | 0 | 29 | 0 | 0 | 37 | 0 |
| Lane Group Flow (vph) | 47 | 277 | 0 | 27 | 373 | 0 | 0 | 185 | 0 | 0 | 246 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 356 | 1402 | | 438 | 1392 | | | 1357 | | | 1285 | |
| v/s Ratio Prot | | 0.09 | | | c0.12 | | | | | | | |
| v/s Ratio Perm | 0.06 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.13 | 0.20 | | 0.06 | 0.27 | | | 0.14 | | | 0.19 | |
| Uniform Delay, d1 | 10.0 | 10.4 | | 9.7 | 10.8 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.78 | 0.79 | | 0.77 | 0.60 | | | 1.06 | | | 0.40 | |
| Incremental Delay, d2 | 0.7 | 0.3 | | 0.1 | 0.3 | | | 0.2 | | | 0.3 | |
| Delay (s) | 8.5 | 8.5 | | 7.6 | 6.7 | | | 12.7 | | | 5.2 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 8.5 | | | 6.8 | | | 12.7 | | | 5.2 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.9 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 43 | 434 | 18 | 86 | 500 | 222 | 22 | 124 | 115 | 340 | 261 | 81 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3288 | | | 3167 | | | 3088 | | | 3182 | |
| Flt Permitted | | 0.81 | | | 0.83 | | | 0.92 | | | 0.71 | |
| Satd. Flow (perm) | | 2668 | | | 2627 | | | 2843 | | | 2309 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 45 | 457 | 19 | 91 | 526 | 234 | 23 | 131 | 121 | 358 | 275 | 85 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 60 | 0 | 0 | 65 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 517 | 0 | 0 | 791 | 0 | 0 | 210 | 0 | 0 | 702 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 1026 | | | 1010 | | | 1350 | | | 604 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.19 | | | c0.30 | | | 0.05 | | | c0.30 | |
| v/c Ratio | | 0.50 | | | 0.78 | | | 0.16 | | | 1.27dl | |
| Uniform Delay, d1 | | 15.3 | | | 17.6 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.49 | | | 1.00 | | | 1.00 | | | 0.79 | |
| Incremental Delay, d2 | | 1.8 | | | 6.1 | | | 0.2 | | | 89.5 | |
| Delay (s) | | 24.5 | | | 23.7 | | | 10.4 | | | 108.4 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 24.5 | | | 23.7 | | | 10.4 | | | 108.4 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 84.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 891 | 126 | 48 | 790 | 0 | 80 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1618 | | | | |
| Flt Permitted | | 1.00 | | | 0.81 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2522 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 938 | 133 | 51 | 832 | 0 | 84 | 0 | 38 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1056 | 0 | 0 | 883 | 0 | 0 | 104 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 925 | | | 236 | | | | | |
| v/s Ratio Prot | c0.35 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.08 | | | | | |
| v/c Ratio | 0.54 | | | 0.95 | | | 0.44 | | | | | |
| Uniform Delay, d1 | 8.7 | | | 27.8 | | | 33.0 | | | | | |
| Progression Factor | 0.08 | | | 1.40 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 19.6 | | | 5.9 | | | | | |
| Delay (s) | 1.1 | | | 58.4 | | | 38.9 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.1 | | | 58.4 | | | 38.9 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 27.7 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.72 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.3% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 222 | 638 | 22 | 112 | 612 | 185 | 60 | 4 | 107 | 212 | 10 | 212 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.31 | 1.00 | | 0.36 | 1.00 | 1.00 | | 0.88 | | 0.43 | 1.00 | 1.00 |
| Satd. Flow (perm) | 513 | 3194 | | 626 | 3320 | 1485 | | 1594 | | 758 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 234 | 672 | 23 | 118 | 644 | 195 | 63 | 4 | 113 | 223 | 11 | 223 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 88 | 0 | 94 | 0 | 0 | 0 | 130 |
| Lane Group Flow (vph) | 234 | 693 | 0 | 118 | 644 | 107 | 0 | 86 | 0 | 223 | 11 | 93 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+ov | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.7 | 43.5 | | 48.8 | 39.6 | 49.6 | | 11.3 | | 24.3 | 24.3 | 37.4 |
| Effective Green, g (s) | 55.7 | 43.5 | | 48.8 | 39.6 | 49.6 | | 11.3 | | 24.3 | 24.3 | 37.4 |
| Actuated g/C Ratio | 0.62 | 0.48 | | 0.54 | 0.44 | 0.55 | | 0.13 | | 0.27 | 0.27 | 0.42 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 468 | 1544 | | 445 | 1461 | 818 | | 200 | | 305 | 472 | 617 |
| v/s Ratio Prot | c0.07 | 0.22 | | 0.03 | 0.19 | 0.01 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.24 | | | 0.12 | | 0.06 | | 0.05 | | c0.12 | | 0.04 |
| v/c Ratio | 0.50 | 0.45 | | 0.27 | 0.44 | 0.13 | | 0.43 | | 0.73 | 0.02 | 0.15 |
| Uniform Delay, d1 | 8.5 | 15.3 | | 10.2 | 17.5 | 9.8 | | 36.4 | | 28.5 | 24.1 | 16.4 |
| Progression Factor | 2.64 | 1.92 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 0.8 | | 0.4 | 1.0 | 0.1 | | 2.0 | | 8.7 | 0.0 | 0.2 |
| Delay (s) | 23.5 | 30.3 | | 10.6 | 18.5 | 9.8 | | 38.4 | | 37.2 | 24.2 | 16.5 |
| Level of Service | C | C | | B | B | A | | D | | D | C | B |
| Approach Delay (s) | | 28.6 | | | 15.8 | | | 38.4 | | | 26.8 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.1 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013




| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 516 | 441 | 2 | 332 | 0 | 0 | 0 | 0 | 19 | 0 | 577 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 0 | 543 | 464 | 2 | 349 | 0 | 0 | 0 | 0 | 20 | 0 | 607 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 349 | | | 543 | | | 722 | 897 | 272 | 625 | 897 | 175 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 349 | | | 543 | | | 722 | 897 | 272 | 625 | 897 | 175 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 95 | 100 | 27 |
| cM capacity (veh/h) | 1199 | | | 1015 | | | 85 | 276 | 723 | 366 | 276 | 835 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 272 | 272 | 464 | 119 | 233 | 20 | 607 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 20 | 0 | | | | | |
| Volume Right | 0 | 0 | 464 | 0 | 0 | 0 | 607 | | | | | |
| cSH | 1700 | 1700 | 1700 | 1015 | 1700 | 366 | 835 | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.27 | 0.00 | 0.14 | 0.05 | 0.73 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 4 | 163 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 15.4 | 19.9 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 19.7 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.1% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 535 | 0 | 334 | 0 | 0 | 0 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 563 | 0 | 352 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 282 | 282 | 352 | | | |
| Volume Left (vph) | 282 | 282 | 352 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.1 | 6.1 | 5.5 | | | |
| Degree Utilization, x | 0.48 | 0.48 | 0.54 | | | |
| Capacity (veh/h) | 574 | 576 | 624 | | | |
| Control Delay (s) | 13.3 | 13.3 | 14.7 | | | |
| Approach Delay (s) | 13.3 | | 14.7 | | | |
| Approach LOS | B | | B | | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.3% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 472 | 64 | 192 | 495 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3073 | |
| Flt Permitted | | 1.00 | | 0.36 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 617 | 3210 | | | | | | 3073 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 497 | 67 | 202 | 521 | 0 | 0 | 0 | 0 | 106 | 22 | 61 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 552 | 0 | 202 | 521 | 0 | 0 | 0 | 0 | 0 | 147 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 472 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.18 | | c0.05 | 0.16 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.20 | | | | | | | | |
| v/c Ratio | | 0.41 | | 0.43 | 0.28 | | | | | | 0.15 | |
| Uniform Delay, d1 | | 17.1 | | 14.7 | 9.1 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.33 | 0.19 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 2.4 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.1 | | 7.2 | 2.1 | | | | | | 21.1 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.1 | | | 3.5 | | | 0.0 | | | 21.1 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 44.3% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 624 | 129 | 63 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3127 | | | 4507 | | | | |
| Flt Permitted | 0.24 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 419 | 3320 | | | 3127 | | | 4507 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 100 | 503 | 0 | 0 | 657 | 136 | 66 | 95 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 42 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 503 | 0 | 0 | 772 | 0 | 0 | 180 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 383 | 1875 | | | 1288 | | | 1432 | | | | |
| v/s Ratio Prot | 0.03 | c0.15 | | | c0.25 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.12 | | | | | | | | | | | |
| v/c Ratio | 0.26 | 0.27 | | | 0.60 | | | 0.13 | | | | |
| Uniform Delay, d1 | 16.9 | 9.5 | | | 19.5 | | | 20.6 | | | | |
| Progression Factor | 0.39 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.6 | 0.3 | | | 2.1 | | | 0.2 | | | | |
| Delay (s) | 8.2 | 3.3 | | | 21.6 | | | 20.8 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.1 | | | 21.6 | | | 20.8 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 44.3% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue

1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 114 | 342 | 114 | 79 | 366 | 79 | 129 | 78 | 27 | 30 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2976 | | | 3006 | | | 1842 | | | 1769 | |
| Flt Permitted | | 0.69 | | | 0.75 | | | 0.73 | | | 0.95 | |
| Satd. Flow (perm) | | 2070 | | | 2273 | | | 1374 | | | 1689 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 120 | 360 | 120 | 83 | 385 | 83 | 136 | 82 | 28 | 32 | 92 | 152 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 22 | 0 | 0 | 7 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 566 | 0 | 0 | 529 | 0 | 0 | 239 | 0 | 0 | 208 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 732 | | | 804 | | | 676 | | | 832 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | | | 0.23 | | | c0.17 | | | 0.12 | |
| v/c Ratio | | 0.77 | | | 0.66 | | | 0.35 | | | 0.25 | |
| Uniform Delay, d1 | | 18.7 | | | 17.7 | | | 10.1 | | | 9.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 7.8 | | | 4.2 | | | 1.4 | | | 0.7 | |
| Delay (s) | | 26.5 | | | 21.9 | | | 11.6 | | | 10.3 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 26.5 | | | 21.9 | | | 11.6 | | | 10.3 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|------|-------|-------|------|----------------------|-------|------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 106 | 201 | 88 | 159 | 311 | 65 | 124 | 539 | 67 | 95 | 940 | 146 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 212 | 3069 | 1333 | 545 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 93 | 167 | 327 | 68 | 131 | 567 | 71 | 100 | 989 | 154 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 45 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 167 | 374 | 0 | 131 | 567 | 26 | 100 | 989 | 56 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | | 1 | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | | 6 | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 181 | 1119 | 486 | 300 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.05 | 0.18 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.11 | | | c0.15 | | | 0.26 | | 0.02 | 0.12 | | 0.04 |
| v/c Ratio | 0.37 | 0.25 | | 0.49 | 0.31 | | 0.72 | 0.51 | 0.05 | 0.33 | 0.88 | 0.12 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 20.7 | 21.3 | | 18.0 | 21.0 | 17.5 | 15.4 | 25.2 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.42 | 1.04 | 2.39 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 4.9 | 0.7 | | 22.1 | 1.6 | 0.2 | 2.3 | 7.6 | 0.4 |
| Delay (s) | 23.0 | 21.5 | | 25.5 | 21.9 | | 40.1 | 22.7 | 17.7 | 24.2 | 33.9 | 43.2 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 23.0 | | | 25.2 | | | 34.3 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 70.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 48 | 295 | 30 | 33 | 393 | 24 | 33 | 100 | 41 | 36 | 124 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2001 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.91 | 1.00 | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1781 | 1466 | | 1913 | 1480 | | 1863 | 1506 | | 1870 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 311 | 32 | 35 | 414 | 25 | 35 | 105 | 43 | 38 | 131 | 67 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 0 | 362 | 15 | 0 | 449 | 12 | 0 | 140 | 18 | 0 | 169 | 28 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 822 | 677 | | 883 | 683 | | 774 | 626 | | 777 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.23 | 0.01 | | 0.08 | 0.01 | | 0.09 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.51 | 0.02 | | 0.18 | 0.03 | | 0.22 | 0.04 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.3 | 9.5 | | 12.0 | 11.2 | | 12.2 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.66 | 0.59 | | 1.21 | 1.56 | | 0.98 | 0.83 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 2.1 | 0.0 | | 0.5 | 0.1 | | 0.6 | 0.1 |
| Delay (s) | | 13.5 | 9.6 | | 10.1 | 5.7 | | 15.1 | 17.6 | | 12.6 | 9.5 |
| Level of Service | | B | A | | B | A | | B | B | | B | A |
| Approach Delay (s) | | 13.2 | | | 9.9 | | | 15.7 | | | 11.7 | |
| Approach LOS | | B | | | A | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 12.1 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.37 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 82.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 305 | 20 | 41 | 249 | 31 | 10 | 109 | 21 | 110 | 214 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3070 | | 1550 | 3047 | | 1550 | 3024 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.55 | 1.00 | | 0.56 | 1.00 | | 0.67 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3070 | | 891 | 3047 | | 915 | 3024 | | 1085 | 2991 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 321 | 21 | 43 | 262 | 33 | 11 | 115 | 22 | 116 | 225 | 68 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 15 | 0 | 0 | 13 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 79 | 335 | 0 | 43 | 280 | 0 | 11 | 124 | 0 | 116 | 253 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1511 | | 302 | 1031 | | 380 | 1256 | | 451 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.09 | | | 0.04 | | | 0.08 | |
| v/s Ratio Perm | | | | 0.05 | | | 0.01 | | | c0.11 | | |
| v/c Ratio | 0.47 | 0.22 | | 0.14 | 0.27 | | 0.03 | 0.10 | | 0.26 | 0.20 | |
| Uniform Delay, d1 | 27.3 | 9.4 | | 14.9 | 15.7 | | 11.2 | 11.6 | | 12.4 | 12.1 | |
| Progression Factor | 0.92 | 0.50 | | 0.76 | 0.73 | | 0.86 | 0.90 | | 1.10 | 1.10 | |
| Incremental Delay, d2 | 8.9 | 0.3 | | 1.0 | 0.6 | | 0.1 | 0.2 | | 1.4 | 0.4 | |
| Delay (s) | 34.0 | 5.1 | | 12.3 | 12.1 | | 9.8 | 10.6 | | 15.1 | 13.7 | |
| Level of Service | C | A | | B | B | | A | B | | B | B | |
| Approach Delay (s) | | 10.5 | | | 12.1 | | | 10.5 | | | 14.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 38.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 267 | 69 | 203 | 330 | 63 | 25 | 245 | 20 | 55 | 270 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3003 | | 1550 | 3025 | | | 3272 | | | 3230 | |
| Flt Permitted | 0.51 | 1.00 | | 0.95 | 1.00 | | | 0.91 | | | 0.87 | |
| Satd. Flow (perm) | 832 | 3003 | | 1550 | 3025 | | | 2982 | | | 2820 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 67 | 281 | 73 | 214 | 347 | 66 | 26 | 258 | 21 | 58 | 284 | 53 |
| RTOR Reduction (vph) | 0 | 36 | 0 | 0 | 24 | 0 | 0 | 9 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 67 | 318 | 0 | 214 | 389 | 0 | 0 | 296 | 0 | 0 | 376 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 256 | 924 | | 143 | 1350 | | | 1147 | | | 1085 | |
| v/s Ratio Prot | c0.11 | | | c0.14 | | | 0.13 | | | | | |
| v/s Ratio Perm | 0.08 | | | | | | 0.10 | | | c0.13 | | |
| v/c Ratio | 0.26 | 0.34 | | 1.50 | 0.29 | | | 0.26 | | | 0.35 | |
| Uniform Delay, d1 | 16.9 | 17.4 | | 29.5 | 11.4 | | | 13.7 | | | 14.2 | |
| Progression Factor | 0.65 | 0.62 | | 1.29 | 1.14 | | | 0.76 | | | 0.73 | |
| Incremental Delay, d2 | 2.4 | 1.0 | | 244.3 | 0.3 | | | 0.5 | | | 0.9 | |
| Delay (s) | 13.5 | 11.7 | | 282.2 | 13.4 | | | 10.9 | | | 11.2 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 12.0 | | | 105.1 | | | 10.9 | | | 11.2 | | |
| Approach LOS | B | | | F | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.0 | HCM Level of Service | | | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | ICU Level of Service | | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

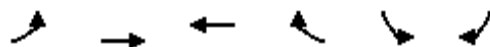
1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 295 | 16 | 75 | 605 | 75 | 53 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1616 | | | 1601 | | | 3248 | | | | |
| Flt Permitted | | 0.96 | | | 0.93 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1556 | | | 1502 | | | 3248 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 17 | 311 | 17 | 79 | 637 | 79 | 56 | 116 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 133 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 342 | 0 | 0 | 790 | 0 | 0 | 213 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.6 | | | 41.6 | | | 15.4 | | | | |
| Effective Green, g (s) | | 41.6 | | | 41.6 | | | 15.4 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 996 | | | 961 | | | 770 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.53 | | | 0.07 | | | | |
| v/c Ratio | | 0.34 | | | 0.82 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 8.9 | | | 20.3 | | | | |
| Progression Factor | | 1.59 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 7.9 | | | 0.8 | | | | |
| Delay (s) | | 9.5 | | | 16.8 | | | 21.1 | | | | |
| Level of Service | | A | | | B | | | C | | | | |
| Approach Delay (s) | | 9.5 | | | 16.8 | | | 21.1 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 81.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 73 | 375 | 588 | 39 | 119 | 159 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 81 | 417 | 653 | 43 | 132 | 177 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.83 | | | | 0.83 | 0.83 |
| vC, conflicting volume | 714 | | | | 1277 | 697 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 551 | | | | 1231 | 531 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 90 | | | | 9 | 61 |
| cM capacity (veh/h) | 822 | | | | 145 | 450 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 498 | 697 | 132 | 177 | | |
| Volume Left | 81 | 0 | 132 | 0 | | |
| Volume Right | 0 | 43 | 0 | 177 | | |
| cSH | 822 | 1700 | 145 | 450 | | |
| Volume to Capacity | 0.10 | 0.41 | 0.91 | 0.39 | | |
| Queue Length 95th (ft) | 8 | 0 | 157 | 46 | | |
| Control Delay (s) | 2.7 | 0.0 | 112.8 | 18.1 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 2.7 | 0.0 | 58.6 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 12.9 | | | |
| Intersection Capacity Utilization | | | 78.3% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 670 | 0 | 1 | 614 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1526 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1526 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 705 | 0 | 1 | 646 | 3 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 705 | 0 | 0 | 647 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.40 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.37 | | |
| v/c Ratio | 0.58 | | | 1.02 | 0.03 | |
| Uniform Delay, d1 | 6.7 | | | 27.0 | 29.8 | |
| Progression Factor | 0.06 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.3 | | | 39.6 | 0.2 | |
| Delay (s) | 1.7 | | | 66.6 | 30.1 | |
| Level of Service | A | | | E | C | |
| Approach Delay (s) | 1.7 | | | 66.6 | 30.1 | |
| Approach LOS | A | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 32.7 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.65 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 47.2% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 233 | 596 | 32 | 404 | 0 | 0 | 0 | 0 | 17 | 6 | 246 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 0 | 245 | 627 | 34 | 425 | 0 | 0 | 0 | 0 | 18 | 6 | 259 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 425 | | | 245 | | | 1055 | 1052 | 436 | 615 | 738 | 425 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 425 | | | 245 | | | 1055 | 1052 | 436 | 615 | 738 | 425 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 55 |
| cM capacity (veh/h) | 1145 | | | 1303 | | | 97 | 223 | 574 | 372 | 339 | 577 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 164 | 709 | 459 | 24 | 259 | | | | | | | |
| Volume Left | 0 | 0 | 34 | 18 | 0 | | | | | | | |
| Volume Right | 0 | 627 | 0 | 0 | 259 | | | | | | | |
| cSH | 1700 | 1700 | 1303 | 363 | 577 | | | | | | | |
| Volume to Capacity | 0.10 | 0.42 | 0.03 | 0.07 | 0.45 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 5 | 58 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 15.6 | 16.2 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 16.2 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.3% | | | ICU Level of Service | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 250 | 0 | 436 | 0 | 0 | 0 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 263 | 0 | 459 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 132 | 132 | 459 | | | |
| Volume Left (vph) | 132 | 132 | 459 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.3 | 6.3 | 4.9 | | | |
| Degree Utilization, x | 0.23 | 0.23 | 0.63 | | | |
| Capacity (veh/h) | 544 | 545 | 708 | | | |
| Control Delay (s) | 9.9 | 9.9 | 15.8 | | | |
| Approach Delay (s) | 9.9 | | 15.8 | | | |
| Approach LOS | A | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.6 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 39.7% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue
























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 490 | 345 | 263 | 621 | 0 | 0 | 0 | 0 | 277 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3424 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3424 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 516 | 363 | 277 | 654 | 0 | 0 | 0 | 0 | 292 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 234 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 | 113 |
| Lane Group Flow (vph) | 0 | 516 | 129 | 0 | 931 | 0 | 0 | 0 | 0 | 161 | 556 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 68.2 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 68.2 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1459 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.16 | | | c0.27 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.10 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.67 | 0.43 | | 0.64 | | | | | 0.83 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 54.6 | 51.1 | | 36.2 | | | | | 66.6 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.06 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.5 | 4.4 | | 0.1 | | | | | 23.9 | 42.7 | 0.2 |
| Delay (s) | | 59.1 | 55.5 | | 2.4 | | | | | 90.4 | 111.2 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 57.6 | | | 2.4 | | | 0.0 | | | 91.0 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.8 | | |
| Intersection Capacity Utilization | | | 75.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|--|---|---|--|---|---|--|--|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   |   | | | |
| Volume (vph) | 292 | 475 | 0 | 0 | 552 | 134 | 332 | 214 | 194 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3065 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3065 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 307 | 500 | 0 | 0 | 581 | 141 | 349 | 225 | 204 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 84 | 0 | 59 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 307 | 500 | 0 | 0 | 581 | 57 | 265 | 454 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 83.8 | 83.8 | | | 37.0 | 37.0 | 12.2 | 12.2 | | | | |
| Effective Green, g (s) | 83.8 | 83.8 | | | 37.0 | 37.0 | 12.2 | 12.2 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 841 | 1797 | | | 742 | 343 | 119 | 234 | | | | |
| v/s Ratio Prot | c0.19 | 0.15 | | | c0.18 | | c0.17 | 0.15 | | | | |
| v/s Ratio Perm | | | | | 0.04 | | | | | | | |
| v/c Ratio | 0.37 | 0.28 | | | 0.78 | 0.17 | 2.23 | 1.94 | | | | |
| Uniform Delay, d1 | 22.4 | 21.2 | | | 57.7 | 49.2 | 73.9 | 73.9 | | | | |
| Progression Factor | 0.01 | 0.02 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 5.4 | 0.2 | 578.3 | 438.2 | | | | |
| Delay (s) | 0.5 | 0.4 | | | 63.1 | 49.4 | 652.2 | 512.1 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 0.4 | | | 60.5 | | 559.8 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 207.9 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.66 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 63.5% | | | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 258 | 136 | 89 | 210 | 67 | 108 | 522 | 70 | 96 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1572 | 1600 | 1373 | 1593 | 1778 | | 1578 | 3016 | | 1537 | 3001 | |
| Flt Permitted | 0.42 | 1.00 | 1.00 | 0.49 | 1.00 | | 0.15 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 698 | 1600 | 1373 | 828 | 1778 | | 246 | 3016 | | 522 | 3001 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 143 | 263 | 139 | 91 | 214 | 68 | 110 | 533 | 71 | 98 | 819 | 122 |
| RTOR Reduction (vph) | 0 | 0 | 93 | 0 | 12 | 0 | 0 | 11 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 143 | 263 | 46 | 91 | 270 | 0 | 110 | 593 | 0 | 98 | 928 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 326 | 542 | 450 | 328 | 553 | | 171 | 1150 | | 271 | 1145 | |
| v/s Ratio Prot | c0.03 | c0.16 | | 0.01 | 0.15 | | c0.03 | 0.20 | | 0.02 | c0.31 | |
| v/s Ratio Perm | 0.14 | | 0.03 | 0.08 | | | 0.24 | | | 0.13 | | |
| v/c Ratio | 0.44 | 0.49 | 0.10 | 0.28 | 0.49 | | 0.64 | 0.52 | | 0.36 | 0.81 | |
| Uniform Delay, d1 | 19.1 | 23.4 | 20.9 | 20.2 | 25.0 | | 18.2 | 21.3 | | 16.4 | 24.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 3.1 | 0.5 | 0.5 | 3.1 | | 8.0 | 1.7 | | 0.8 | 6.3 | |
| Delay (s) | 20.0 | 26.5 | 21.3 | 20.6 | 28.1 | | 26.2 | 22.9 | | 17.3 | 31.0 | |
| Level of Service | C | C | C | C | C | | C | C | | B | C | |
| Approach Delay (s) | | 23.5 | | | 26.3 | | | 23.4 | | | 29.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 73.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 39 | 313 | 61 | 13 | 298 | 22 | 37 | 59 | 19 | 21 | 91 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1968 | 1467 | | 1629 | 1381 | | 1894 | | | 1870 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.89 | | | 0.97 | |
| Satd. Flow (perm) | | 1867 | 1467 | | 1605 | 1381 | | 1712 | | | 1824 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 329 | 64 | 14 | 314 | 23 | 39 | 62 | 20 | 22 | 96 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 32 | 0 | 0 | 12 | 0 | 11 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 0 | 370 | 32 | 0 | 328 | 11 | 0 | 110 | 0 | 0 | 158 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 919 | 722 | | 790 | 680 | | 711 | | | 758 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.02 | | 0.20 | 0.01 | | 0.06 | | | 0.09 | |
| v/c Ratio | | 0.40 | 0.04 | | 0.42 | 0.02 | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | | 10.4 | 8.6 | | 10.5 | 8.4 | | 11.9 | | | 12.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.93 | 2.82 | | 1.00 | | | 1.95 | |
| Incremental Delay, d2 | | 1.3 | 0.1 | | 1.5 | 0.0 | | 0.5 | | | 0.6 | |
| Delay (s) | | 11.8 | 8.7 | | 21.9 | 23.9 | | 12.3 | | | 24.4 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 11.3 | | | 22.0 | | | 12.3 | | | 24.4 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 61.3% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 59 | 194 | 41 | 11 | 214 | 10 | 36 | 114 | 19 | 15 | 184 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1748 | 1443 | | 1728 | 1487 | | 1713 | 1489 | | 1712 | |
| Flt Permitted | | 0.88 | 1.00 | | 0.98 | 1.00 | | 0.89 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1552 | 1443 | | 1701 | 1487 | | 1542 | 1489 | | 1689 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 61 | 202 | 43 | 11 | 223 | 10 | 38 | 119 | 20 | 16 | 192 | 73 |
| RTOR Reduction (vph) | 0 | 0 | 28 | 0 | 0 | 6 | 0 | 0 | 10 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 263 | 15 | 0 | 234 | 4 | 0 | 157 | 10 | 0 | 262 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 549 | 511 | | 602 | 526 | | 759 | 733 | | 832 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.14 | 0.00 | | 0.10 | 0.01 | | c0.15 | |
| v/c Ratio | | 0.48 | 0.03 | | 0.39 | 0.01 | | 0.21 | 0.01 | | 0.31 | |
| Uniform Delay, d1 | | 16.3 | 13.7 | | 15.7 | 13.6 | | 9.3 | 8.4 | | 9.9 | |
| Progression Factor | | 1.92 | 3.44 | | 0.96 | 0.95 | | 0.19 | 0.24 | | 1.00 | |
| Incremental Delay, d2 | | 2.8 | 0.1 | | 1.8 | 0.0 | | 0.4 | 0.0 | | 1.0 | |
| Delay (s) | | 34.2 | 47.3 | | 16.9 | 12.9 | | 2.2 | 2.1 | | 10.9 | |
| Level of Service | | C | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 36.0 | | | 16.7 | | | 2.2 | | | 10.9 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.38 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 62.4% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 147 | 35 | 76 | 8 | 14 | 9 | 38 | 225 | 8 | 21 | 481 | 204 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1871 | 1440 | | 1776 | | | 1993 | | | 1976 | 1382 |
| Flt Permitted | | 0.78 | 1.00 | | 0.94 | | | 0.90 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1509 | 1440 | | 1693 | | | 1814 | | | 1948 | 1382 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 155 | 37 | 80 | 8 | 15 | 9 | 40 | 237 | 8 | 22 | 506 | 215 |
| RTOR Reduction (vph) | 0 | 0 | 47 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 90 |
| Lane Group Flow (vph) | 0 | 192 | 33 | 0 | 25 | 0 | 0 | 283 | 0 | 0 | 528 | 125 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 671 | 598 | | 443 | | | 893 | | | 959 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | 0.02 | | 0.01 | | | 0.16 | | | c0.27 | 0.09 |
| v/c Ratio | | 0.29 | 0.06 | | 0.06 | | | 0.32 | | | 0.55 | 0.18 |
| Uniform Delay, d1 | | 12.6 | 11.4 | | 18.0 | | | 9.9 | | | 11.5 | 9.2 |
| Progression Factor | | 0.64 | 0.82 | | 1.00 | | | 0.60 | | | 0.64 | 0.23 |
| Incremental Delay, d2 | | 1.0 | 0.2 | | 0.2 | | | 0.8 | | | 1.8 | 0.5 |
| Delay (s) | | 9.0 | 9.5 | | 18.2 | | | 6.8 | | | 9.2 | 2.6 |
| Level of Service | | A | A | | B | | | A | | | A | A |
| Approach Delay (s) | | 9.2 | | | 18.2 | | | 6.8 | | | 7.3 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.8 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 70.5% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 866 | 289 | 333 | 961 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4569 | | 1620 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.14 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4569 | | 238 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 884 | 295 | 340 | 981 | 0 | 0 | 0 | 0 | 523 | 290 | 341 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 105 |
| Lane Group Flow (vph) | 0 | 1135 | 0 | 340 | 981 | 0 | 0 | 0 | 0 | 298 | 584 | 158 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 47.1 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Effective Green, g (s) | | 47.1 | | 75.2 | 75.2 | | | | | 27.8 | 27.8 | 27.8 |
| Actuated g/C Ratio | | 0.41 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1871 | | 439 | 2171 | | | | | 360 | 704 | 349 |
| v/s Ratio Prot | | 0.25 | | 0.16 | 0.30 | | | | | | | |
| v/s Ratio Perm | | | | 0.35 | | | | | | 0.20 | 0.20 | 0.11 |
| v/c Ratio | | 0.61 | | 0.77 | 0.45 | | | | | 0.83 | 0.83 | 0.45 |
| Uniform Delay, d1 | | 26.7 | | 22.4 | 9.8 | | | | | 41.3 | 41.4 | 37.1 |
| Progression Factor | | 1.00 | | 1.05 | 1.59 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 6.2 | 0.5 | | | | | 14.8 | 8.2 | 1.1 |
| Delay (s) | | 28.1 | | 29.6 | 16.0 | | | | | 56.1 | 49.6 | 38.2 |
| Level of Service | | C | | C | B | | | | | E | D | D |
| Approach Delay (s) | | 28.1 | | | 19.5 | | | 0.0 | | | 48.7 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 100.0% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1038 | 0 | 0 | 864 | 271 | 430 | 351 | 308 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4526 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 615 | 3353 | | | 3241 | 1489 | | 4526 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1093 | 0 | 0 | 909 | 285 | 453 | 369 | 324 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 95 | 0 | 58 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1093 | 0 | 0 | 909 | 190 | 0 | 1088 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 68.8 | 68.8 | | | 50.9 | 50.9 | | 34.2 | | | | |
| Effective Green, g (s) | 68.8 | 68.8 | | | 50.9 | 50.9 | | 34.2 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.44 | 0.44 | | 0.30 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 630 | 2006 | | | 1434 | 659 | | 1346 | | | | |
| v/s Ratio Prot | 0.06 | c0.33 | | | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.28 | | | | | 0.13 | | 0.24 | | | | |
| v/c Ratio | 0.57 | 0.54 | | | 0.63 | 0.29 | | 0.81 | | | | |
| Uniform Delay, d1 | 14.1 | 13.8 | | | 24.8 | 20.5 | | 37.4 | | | | |
| Progression Factor | 0.64 | 0.32 | | | 0.94 | 1.07 | | 1.00 | | | | |
| Incremental Delay, d2 | 1.0 | 0.8 | | | 1.8 | 0.9 | | 4.2 | | | | |
| Delay (s) | 10.0 | 5.1 | | | 25.1 | 22.8 | | 41.6 | | | | |
| Level of Service | A | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 6.3 | | | 24.5 | | | 41.6 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.7 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | | Sum of lost time (s) | | | 18.0 | | |
| Intersection Capacity Utilization | | | 100.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 633 | 408 | 104 | 626 | 53 | 227 | 179 | 66 | 74 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1564 | 3273 | 1313 | 1600 | 3283 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.18 | 1.00 | 1.00 | 0.40 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 296 | 3273 | 1313 | 671 | 3283 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 666 | 429 | 109 | 659 | 56 | 239 | 188 | 69 | 78 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 142 | 666 | 256 | 109 | 709 | 0 | 239 | 219 | 0 | 78 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.3 | 68.7 | 42.0 | 32.9 | | 38.1 | 26.7 | | 26.1 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.3 | 68.7 | 42.0 | 32.9 | | 38.1 | 26.7 | | 26.1 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.37 | 0.29 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 481 | 1489 | 784 | 319 | 939 | | 348 | 697 | | 258 | 465 | |
| v/s Ratio Prot | 0.07 | c0.20 | 0.05 | c0.03 | c0.22 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.09 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.30 | 0.45 | 0.33 | 0.34 | 0.76 | | 0.69 | 0.31 | | 0.30 | 0.41 | |
| Uniform Delay, d1 | 14.1 | 21.5 | 11.6 | 24.9 | 37.4 | | 30.6 | 36.6 | | 36.2 | 43.6 | |
| Progression Factor | 0.67 | 0.81 | 2.63 | 1.00 | 1.00 | | 0.86 | 0.94 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.3 | 0.8 | 0.2 | 0.6 | 5.6 | | 5.4 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 10.8 | 18.1 | 30.6 | 25.5 | 43.0 | | 31.8 | 35.1 | | 36.9 | 45.7 | |
| Level of Service | B | B | C | C | D | | C | D | | D | D | |
| Approach Delay (s) | | 21.6 | | | 40.7 | | | 33.5 | | | 43.8 | |
| Approach LOS | | C | | | D | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 19.0 | | |
| Intersection Capacity Utilization | | | 70.7% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont Street & Ashland Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 193 | 367 | 72 | 213 | 113 | 362 | 340 | 78 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 2894 | | 1653 | 3184 | | 1620 | 3407 | | 1580 | 3183 | |
| Flt Permitted | 0.52 | 1.00 | | 0.29 | 1.00 | | 0.32 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 934 | 2894 | | 502 | 3184 | | 544 | 3407 | | 826 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 203 | 386 | 76 | 224 | 119 | 381 | 358 | 82 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 269 | 0 | 0 | 56 | 0 | 0 | 17 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 320 | 0 | 76 | 287 | 0 | 381 | 423 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 41.6 | 34.9 | | 44.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 41.6 | 34.9 | | 44.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.36 | 0.30 | | 0.38 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 383 | 878 | | 271 | 999 | | 454 | 1309 | | 340 | 888 | |
| v/s Ratio Prot | 0.01 | c0.11 | | c0.02 | 0.09 | | c0.15 | 0.12 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | 0.09 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.13 | 0.36 | | 0.28 | 0.29 | | 0.84 | 0.32 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 24.1 | 31.4 | | 23.7 | 29.7 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.98 | |
| Incremental Delay, d2 | 0.2 | 1.2 | | 0.7 | 0.7 | | 13.1 | 0.7 | | 3.8 | 2.2 | |
| Delay (s) | 24.3 | 32.5 | | 24.3 | 30.5 | | 33.9 | 25.5 | | 32.3 | 36.6 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 31.9 | | | 29.4 | | | 29.4 | | | 35.3 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 31.6 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.61 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 115.0 | | | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | 74.2% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 603 | 141 | 10 | 376 | 66 | 104 | 287 | 9 | 198 | 609 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3029 | | | 3035 | | 1452 | 3228 | | 1522 | 2872 | |
| Flt Permitted | | 0.72 | | | 0.93 | | 0.21 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 2185 | | | 2822 | | 318 | 3228 | | 898 | 2872 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 635 | 148 | 11 | 396 | 69 | 109 | 302 | 9 | 208 | 641 | 193 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 869 | 0 | 0 | 455 | 0 | 109 | 308 | 0 | 208 | 790 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 892 | | | 738 | | 207 | 1192 | | 425 | 1060 | |
| v/s Ratio Prot | | c0.06 | | | | | c0.03 | 0.10 | | 0.03 | c0.28 | |
| v/s Ratio Perm | | c0.31 | | | 0.16 | | 0.19 | | | 0.18 | | |
| v/c Ratio | | 0.97 | | | 0.62 | | 0.53 | 0.26 | | 0.49 | 0.75 | |
| Uniform Delay, d1 | | 19.7 | | | 21.1 | | 12.2 | 14.3 | | 12.4 | 17.8 | |
| Progression Factor | | 1.00 | | | 1.51 | | 1.06 | 0.59 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 24.5 | | | 0.4 | | 8.9 | 0.5 | | 4.0 | 4.8 | |
| Delay (s) | | 44.1 | | | 32.2 | | 21.9 | 8.9 | | 16.4 | 22.6 | |
| Level of Service | | D | | | C | | C | A | | B | C | |
| Approach Delay (s) | | 44.1 | | | 32.2 | | | 12.3 | | | 21.4 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 82.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 67 | 198 | 136 | 109 | 167 | 28 | 72 | 462 | 80 | 35 | 698 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 1885 | | 1599 | 1993 | | 1676 | 3221 | | 1435 | 3273 | |
| Flt Permitted | 0.62 | 1.00 | | 0.44 | 1.00 | | 0.28 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 1118 | 1885 | | 736 | 1993 | | 502 | 3221 | | 623 | 3273 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 71 | 208 | 143 | 115 | 176 | 29 | 76 | 486 | 84 | 37 | 735 | 74 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 9 | 0 | 0 | 21 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 71 | 313 | 0 | 115 | 196 | 0 | 76 | 549 | 0 | 37 | 797 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 413 | 696 | | 272 | 736 | | 239 | 1536 | | 297 | 1561 | |
| v/s Ratio Prot | c0.17 | | | 0.10 | | | 0.17 | | | c0.24 | | |
| v/s Ratio Perm | 0.06 | | | 0.16 | | | 0.15 | | | 0.06 | | |
| v/c Ratio | 0.17 | 0.45 | | 0.42 | 0.27 | | 0.32 | 0.36 | | 0.12 | 0.51 | |
| Uniform Delay, d1 | 13.8 | 15.5 | | 15.3 | 14.3 | | 10.5 | 10.7 | | 9.5 | 11.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.30 | 1.31 | | 1.00 | 1.00 | | 1.12 | 0.91 | |
| Incremental Delay, d2 | 0.9 | 2.1 | | 3.0 | 0.5 | | 3.5 | 0.6 | | 0.6 | 0.8 | |
| Delay (s) | 14.7 | 17.6 | | 22.9 | 19.4 | | 14.0 | 11.4 | | 11.1 | 11.5 | |
| Level of Service | B | B | | C | B | | B | B | | B | B | |
| Approach Delay (s) | 17.1 | | | 20.7 | | | 11.7 | | | 11.5 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.9 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 70.5% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 785 | 227 | 550 | 18 | 3 | 10 | 9 | 47 | 9 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.94 | |
| Flt Protected | | 1.00 | | 0.99 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3091 | | | | 1810 | | | 1824 | |
| Flt Permitted | | 0.95 | | 0.56 | | | | 0.96 | | | 0.89 | |
| Satd. Flow (perm) | | 3012 | | 1753 | | | | 1750 | | | 1671 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 826 | 239 | 579 | 19 | 3 | 11 | 9 | 49 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 828 | 0 | 835 | 0 | 0 | 0 | 34 | 0 | 0 | 13 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 834 | | 852 | | | | 377 | | | 360 | |
| v/s Ratio Prot | | | | c0.09 | | | | | | | | |
| v/s Ratio Perm | | 0.27 | | c0.32 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 0.99 | | 1.14dl | | | | 0.09 | | | 0.04 | |
| Uniform Delay, d1 | | 23.4 | | 18.7 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.45 | | 0.88 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 20.4 | | 25.5 | | | | 0.5 | | | 0.2 | |
| Delay (s) | | 54.3 | | 41.9 | | | | 20.9 | | | 20.4 | |
| Level of Service | | D | | D | | | | C | | | C | |
| Approach Delay (s) | | 54.3 | | 41.9 | | | | 20.9 | | | 20.4 | |
| Approach LOS | | D | | D | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 53.7 | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 91.8% | | ICU Level of Service | | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 242 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 255 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 258 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.17 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.07 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.87 | |
| Incremental Delay, d2 | | 77.3 | |
| Delay (s) | | 101.4 | |
| Level of Service | | F | |
| Approach Delay (s) | | 101.4 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 264 | 792 | 569 | 63 | 96 | 234 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3279 | 3271 | | 1660 | 1485 |
| Flt Permitted | | 0.65 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2152 | 3271 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 278 | 834 | 599 | 66 | 101 | 246 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 182 |
| Lane Group Flow (vph) | 0 | 1112 | 652 | 0 | 101 | 64 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1324 | 2013 | | 434 | 388 |
| v/s Ratio Prot | | | 0.20 | | c0.06 | |
| v/s Ratio Perm | | c0.52 | | | | 0.04 |
| v/c Ratio | | 0.84 | 0.32 | | 0.23 | 0.17 |
| Uniform Delay, d1 | | 10.0 | 6.0 | | 18.9 | 18.5 |
| Progression Factor | | 1.20 | 1.19 | | 1.29 | 2.46 |
| Incremental Delay, d2 | | 2.0 | 0.4 | | 1.2 | 0.9 |
| Delay (s) | | 13.9 | 7.5 | | 25.6 | 46.4 |
| Level of Service | | B | A | | C | D |
| Approach Delay (s) | | 13.9 | 7.5 | | 40.4 | |
| Approach LOS | | B | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 16.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 65.5% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 81 | 810 | 548 | 152 | 265 | 88 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3118 | 3068 | | 1506 | 1343 |
| Flt Permitted | | 0.82 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2567 | 3068 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 85 | 853 | 577 | 160 | 279 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 39 | 0 | 0 | 60 |
| Lane Group Flow (vph) | 0 | 938 | 698 | 0 | 279 | 33 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1343 | 1605 | | 533 | 475 |
| v/s Ratio Prot | | | 0.23 | | c0.19 | |
| v/s Ratio Perm | | c0.37 | | | | 0.02 |
| v/c Ratio | | 0.70 | 0.44 | | 0.52 | 0.07 |
| Uniform Delay, d1 | | 11.6 | 9.6 | | 16.7 | 13.9 |
| Progression Factor | | 1.08 | 1.11 | | 1.65 | 3.36 |
| Incremental Delay, d2 | | 1.9 | 0.8 | | 3.2 | 0.3 |
| Delay (s) | | 14.5 | 11.4 | | 30.8 | 46.9 |
| Level of Service | | B | B | | C | D |
| Approach Delay (s) | | 14.5 | 11.4 | | 34.8 | |
| Approach LOS | | B | B | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 17.1 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.63 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 72.8% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 674 | 261 | 121 | 589 | 205 | 58 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.96 | | 1.00 | 1.00 | 0.97 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2387 | | 1788 | 2506 | 1748 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2387 | | 243 | 2506 | 1748 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 709 | 275 | 127 | 620 | 216 | 61 |
| RTOR Reduction (vph) | 21 | 0 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 963 | 0 | 127 | 620 | 261 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | | | Perm | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1138 | | 116 | 1195 | 645 | |
| v/s Ratio Prot | 0.40 | | | 0.25 | c0.15 | |
| v/s Ratio Perm | | | c0.52 | | | |
| v/c Ratio | 0.85 | | 1.09 | 0.52 | 0.41 | |
| Uniform Delay, d1 | 14.9 | | 17.0 | 11.8 | 15.2 | |
| Progression Factor | 1.34 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.0 | | 111.3 | 1.6 | 1.9 | |
| Delay (s) | 25.9 | | 128.3 | 13.4 | 17.1 | |
| Level of Service | C | | F | B | B | |
| Approach Delay (s) | 25.9 | | | 33.0 | 17.1 | |
| Approach LOS | C | | | C | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 27.3 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.79 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 77.8% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 995 | 38 | 112 | 704 | 1 | 62 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.37 | 1.00 | 1.00 | 0.21 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 739 | 3431 | 1479 | 356 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 1 | 1036 | 40 | 117 | 733 | 1 | 65 | 0 | 164 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 146 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1036 | 25 | 117 | 733 | 1 | 0 | 65 | 18 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 53.0 | 53.0 | 53.0 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Effective Green, g (s) | 53.0 | 53.0 | 53.0 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.62 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 461 | 2139 | 922 | 457 | 2652 | 1222 | | 165 | 161 | | | |
| v/s Ratio Prot | | c0.30 | | 0.04 | c0.22 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.17 | | 0.00 | | c0.04 | 0.01 | | | |
| v/c Ratio | 0.00 | 0.48 | 0.03 | 0.26 | 0.28 | 0.00 | | 0.39 | 0.11 | | | |
| Uniform Delay, d1 | 6.0 | 8.6 | 6.1 | 3.2 | 2.2 | 1.7 | | 35.4 | 34.3 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 0.8 | 0.1 | 0.3 | 0.1 | 0.0 | | 1.6 | 0.3 | | | |
| Delay (s) | 6.0 | 9.4 | 6.2 | 3.5 | 2.3 | 1.7 | | 36.9 | 34.6 | | | |
| Level of Service | A | A | A | A | A | A | | D | C | | | |
| Approach Delay (s) | | 9.3 | | | 2.4 | | | 35.3 | | | 0.0 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.3 | | | HCM Level of Service | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 50.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 9 | 946 | 840 | 30 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3098 | 3083 | | 1532 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2928 | 3083 | | 1532 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 9 | 996 | 884 | 32 | 75 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 1005 | 913 | 0 | 82 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1074 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.30 | | c0.05 | |
| v/s Ratio Perm | | c0.34 | | | | |
| v/c Ratio | | 0.94 | 0.42 | | 0.69 | |
| Uniform Delay, d1 | | 27.5 | 5.3 | | 40.4 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 15.8 | 0.2 | | 27.6 | |
| Delay (s) | | 43.3 | 0.3 | | 68.1 | |
| Level of Service | | D | A | | E | |
| Approach Delay (s) | | 43.3 | 0.3 | | 68.1 | |
| Approach LOS | | D | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 24.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.72 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 46.8% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 38 | 480 | 0 | 1 | 577 | 39 | 3 | 2 | 28 | 202 | 0 | 133 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1774 | | | 3340 | | | 1467 | | | 1669 | 1348 |
| Flt Permitted | | 0.92 | | | 0.95 | | | 0.93 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1640 | | | 3190 | | | 1369 | | | 1568 | 1348 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 505 | 0 | 1 | 607 | 41 | 3 | 2 | 29 | 213 | 0 | 140 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 26 | 0 | 0 | 0 | 94 |
| Lane Group Flow (vph) | 0 | 545 | 0 | 0 | 643 | 0 | 0 | 8 | 0 | 0 | 213 | 46 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 598 | | | 1714 | | | 145 | | | 480 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.33 | | | 0.14 | | | 0.01 | | | c0.05 | 0.03 |
| v/c Ratio | | 0.91 | | | 0.38 | | | 0.06 | | | 0.44 | 0.10 |
| Uniform Delay, d1 | | 25.7 | | | 11.7 | | | 34.2 | | | 24.4 | 19.8 |
| Progression Factor | | 1.00 | | | 1.19 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 20.5 | | | 0.1 | | | 0.7 | | | 3.0 | 0.5 |
| Delay (s) | | 46.2 | | | 14.0 | | | 34.9 | | | 27.3 | 20.3 |
| Level of Service | | D | | | B | | | C | | | C | C |
| Approach Delay (s) | | 46.2 | | | 14.0 | | | 34.9 | | | 24.5 | |
| Approach LOS | | D | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 75.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

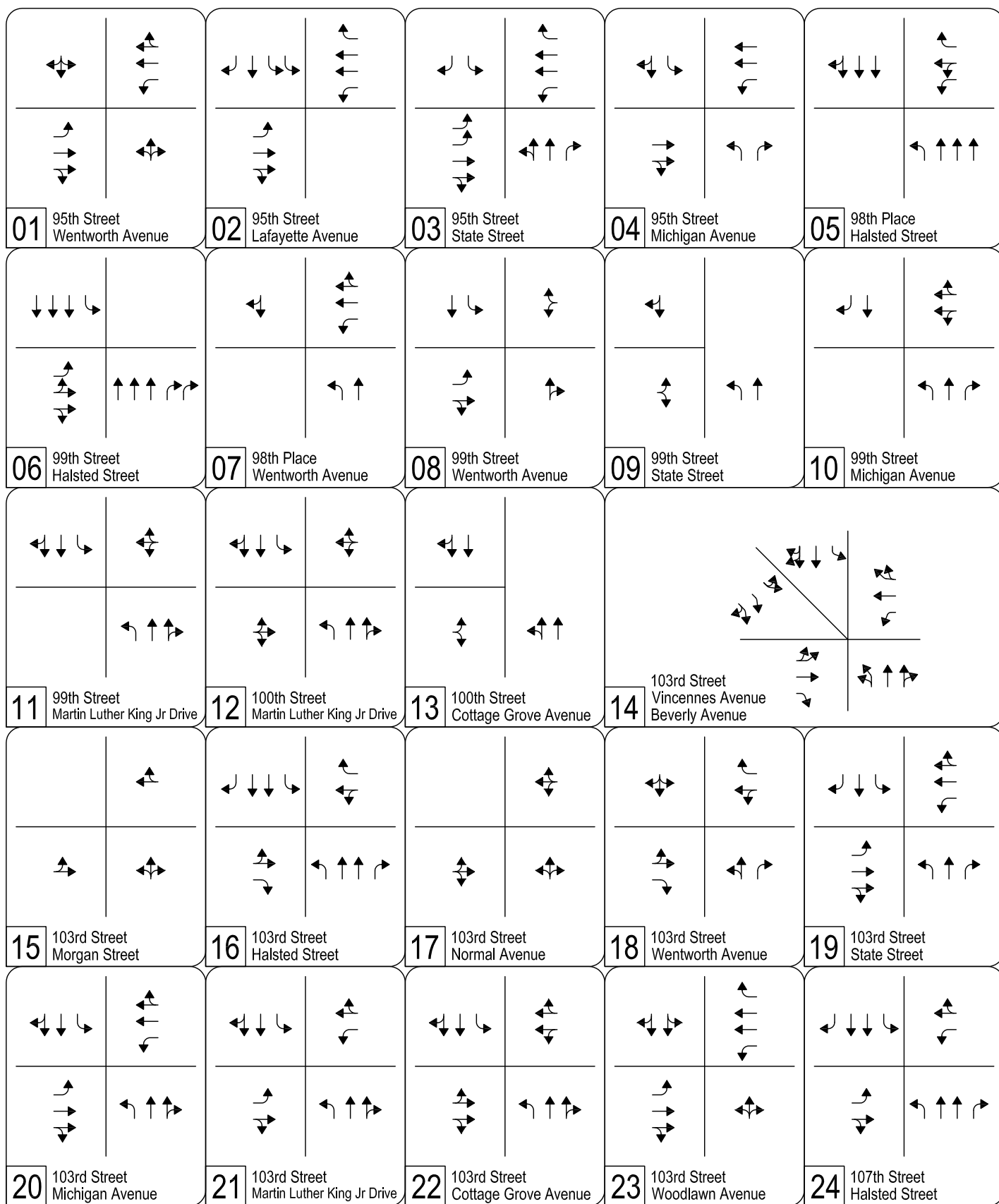
Appendix C

Bus Rapid Transit (BRT) Alternative

BRT Alternative Project Traffic Estimates

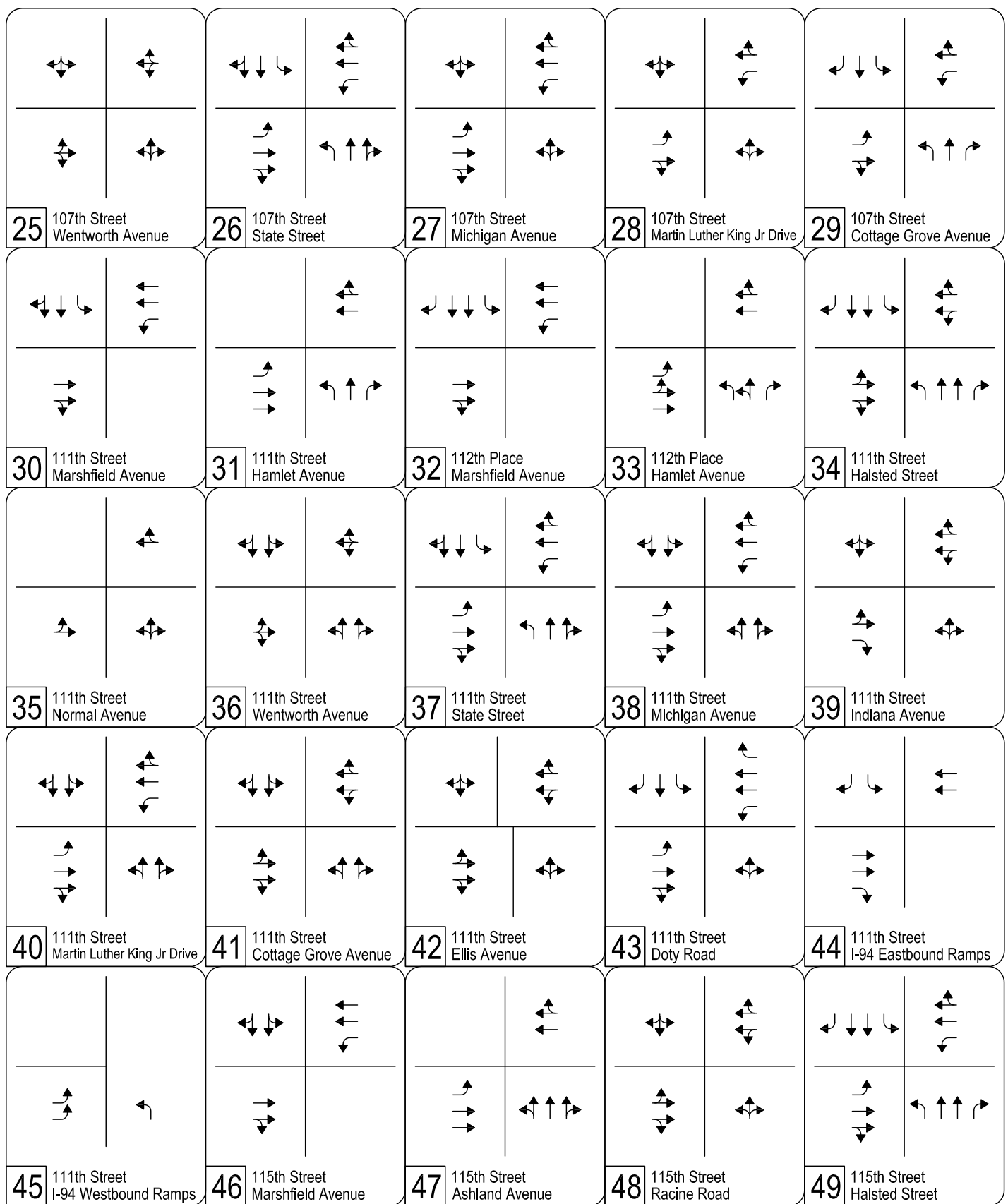
| ITE Land Use | Unit | Trip Generation Rate | | | Peak Hour Direction | | | |
|-------------------------------|----------------|----------------------|--------------|--------------|---------------------|--------|-------|--------|
| | | Daily | AM Peak Hour | PM Peak Hour | AM In | AM Out | PM In | PM Out |
| Light Rail with Park and Ride | Parking Spaces | 2.51 | 1.07 | 1.24 | 80% | 20% | 20% | 80% |

| BRT Alternative Park and Ride Facilities | | Estimated Project Traffic | | | | | | |
|--|----------------|---------------------------|--------------|------------|--------------|------------|--------------|--------------|
| Location | Parking Spaces | Daily | AM In | AM Out | AM Total | PM In | PM Out | PM Total |
| 103rd Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| 111th Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| Kensington Avenue | 1,000 | 2,510 | 856 | 214 | 1,070 | 248 | 992 | 1,240 |
| 130th Street | 1,400 | 3,514 | 1,198 | 300 | 1,498 | 347 | 1,389 | 1,736 |
| Total | 2,800 | 7,028 | 2,396 | 600 | 2,996 | 695 | 2,777 | 3,472 |



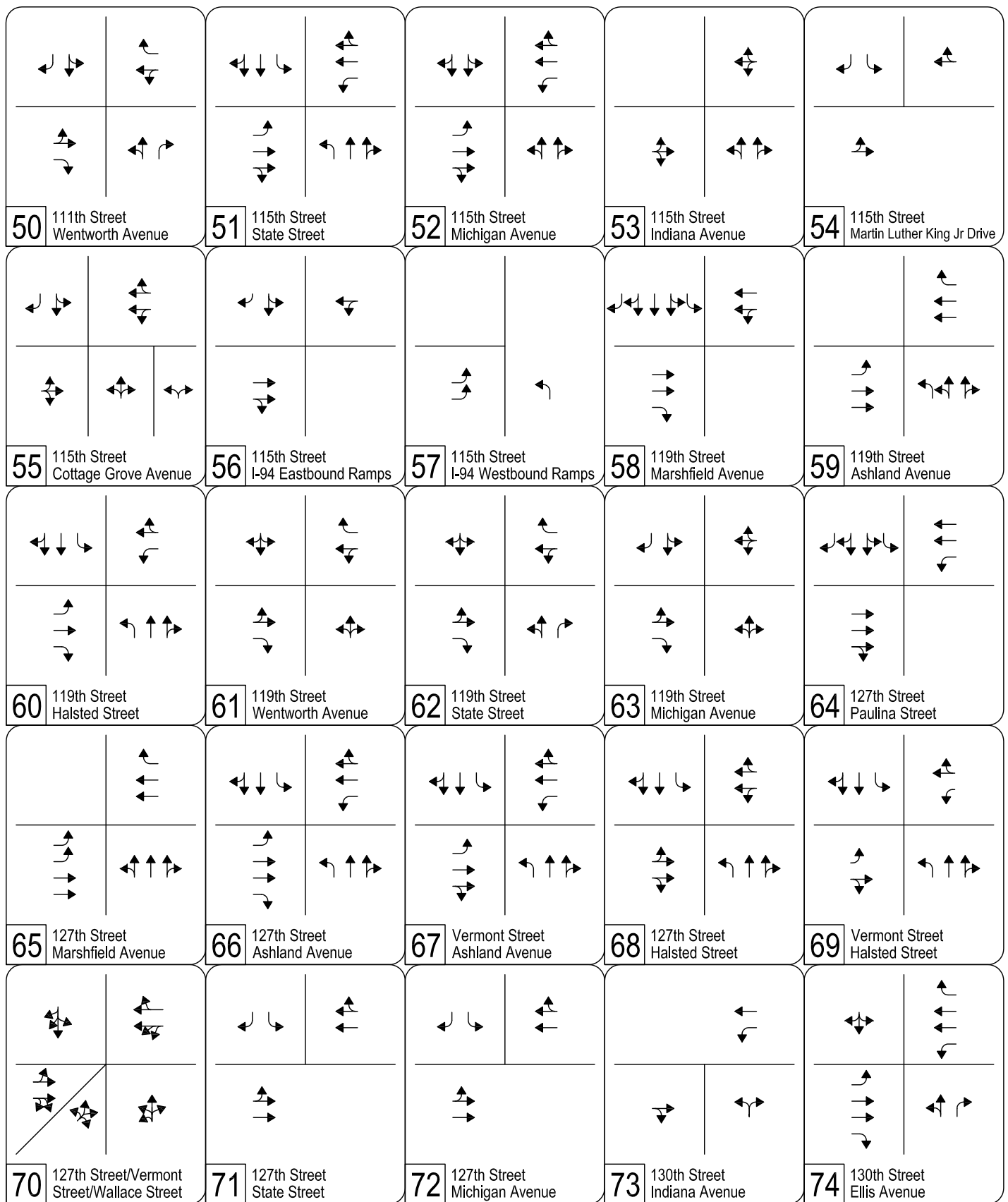
BRT Alternative (2026) Intersection Lane Geometry

Page 1 of 3



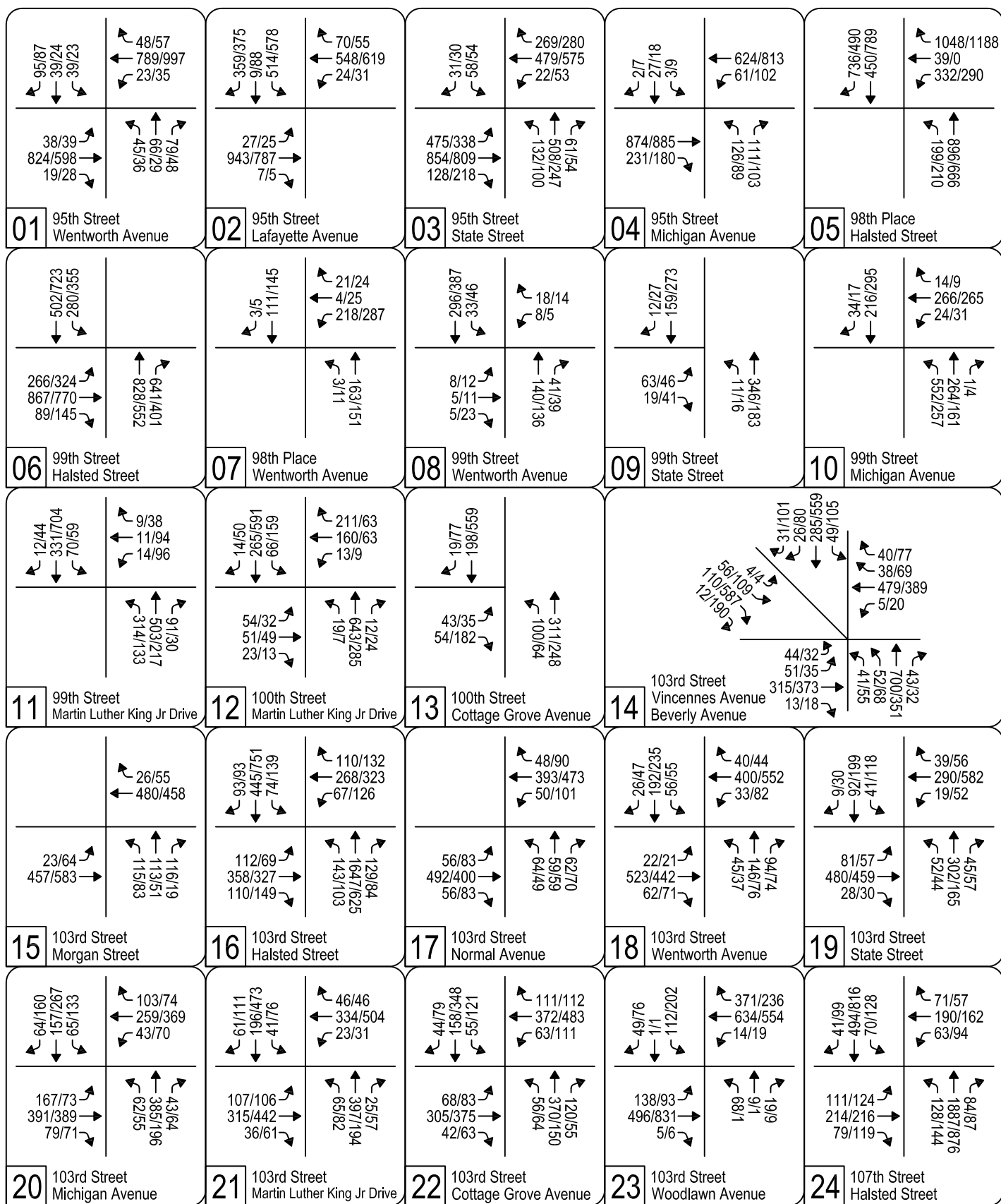
BRT Alternative (2026) Intersection Lane Geometry

Page 2 of 3



BRT Alternative (2026) Intersection Lane Geometry

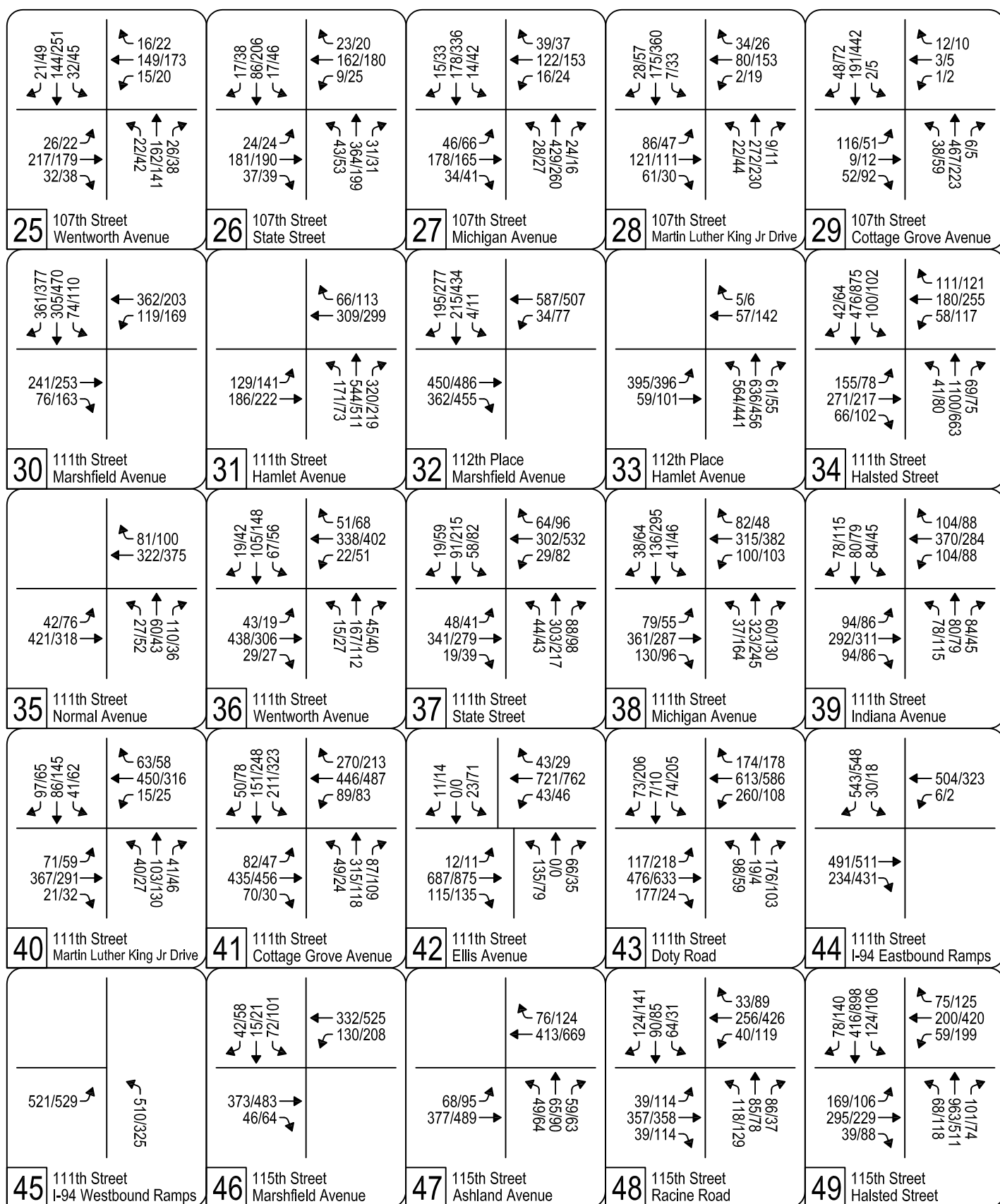
Page 3 of 3



BRT Alternative (2026) Intersection Traffic Volumes

Page 1 of 3

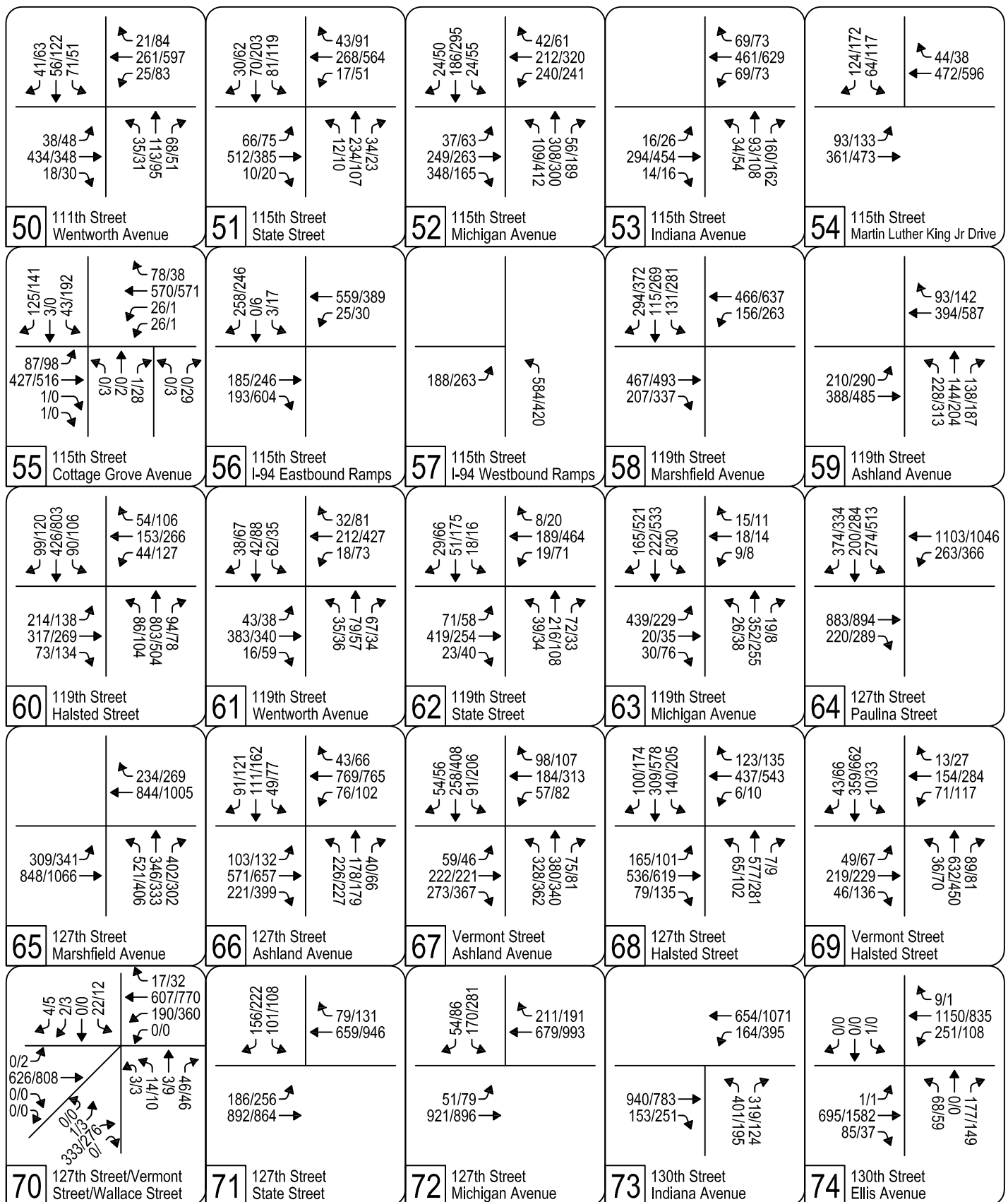
Legend: AM/PM Peak Hour Volumes



BRT Alternative (2026) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



BRT Alternative (2026) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 38 | 824 | 19 | 23 | 789 | 48 | 45 | 66 | 79 | 39 | 39 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1416 | 2975 | | 1592 | 2978 | | | 1753 | | | 1670 | |
| Flt Permitted | 0.26 | 1.00 | | 0.26 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 384 | 2975 | | 429 | 2978 | | | 1597 | | | 1527 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 867 | 20 | 24 | 831 | 51 | 47 | 69 | 83 | 41 | 41 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 63 | 0 |
| Lane Group Flow (vph) | 40 | 885 | 0 | 24 | 875 | 0 | 0 | 160 | 0 | 0 | 119 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 201 | 1556 | | 224 | 1558 | | | 565 | | | 540 | |
| v/s Ratio Prot | | c0.30 | | | 0.29 | | | | | | | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.20 | 0.57 | | 0.11 | 0.56 | | | 0.28 | | | 0.22 | |
| Uniform Delay, d1 | 8.3 | 10.5 | | 7.8 | 10.5 | | | 15.1 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.81 | 1.13 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.2 | 1.5 | | 0.8 | 1.3 | | | 1.2 | | | 0.9 | |
| Delay (s) | 10.5 | 12.0 | | 7.2 | 13.1 | | | 16.3 | | | 15.7 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.0 | | | 12.9 | | | 16.3 | | | 15.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

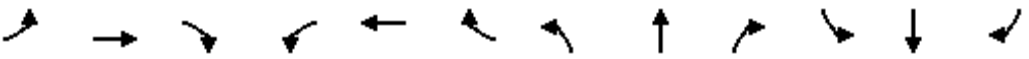
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 943 | 7 | 24 | 548 | 70 | 0 | 0 | 0 | 514 | 9 | 359 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 776 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 355 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 993 | 7 | 25 | 577 | 74 | 0 | 0 | 0 | 541 | 9 | 378 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 999 | 0 | 25 | 577 | 42 | 0 | 0 | 0 | 541 | 9 | 206 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 163 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.30 | | 0.01 | c0.18 | | | | | c0.17 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.08 | | | | | | 0.15 |
| v/c Ratio | 0.17 | 0.92 | | 0.04 | 0.33 | 0.14 | | | | 0.76 | 0.03 | 0.64 |
| Uniform Delay, d1 | 31.6 | 41.8 | | 15.1 | 15.3 | 13.6 | | | | 46.6 | 38.7 | 45.1 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.62 | 1.95 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 12.2 | | 0.1 | 0.3 | 0.7 | | | | 7.3 | 0.2 | 9.2 |
| Delay (s) | 27.2 | 46.7 | | 4.5 | 9.8 | 27.2 | | | | 53.9 | 38.9 | 54.3 |
| Level of Service | C | D | | A | A | C | | | | D | D | D |
| Approach Delay (s) | | 46.2 | | | 11.5 | | 0.0 | | | | 54.0 | |
| Approach LOS | | D | | | B | | A | | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | | 13.0 | | |
| Intersection Capacity Utilization | | | 51.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|------|----------------------|-------|------|-------|-------|--------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↔↔ | ↕↔ | | ↔ | ↕↕ | ↔ | | ↕↕ | ↔ | ↔ | | ↔ |
| Volume (vph) | 475 | 854 | 128 | 22 | 479 | 269 | 132 | 508 | 61 | 58 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.95 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 500 | 899 | 135 | 23 | 504 | 283 | 139 | 535 | 64 | 61 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 161 | 0 | 0 | 25 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 500 | 1025 | 0 | 23 | 504 | 122 | 0 | 674 | 39 | 61 | 0 | 3 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.31 | 0.48 | | 0.07 | 0.24 | 0.24 | | 0.24 | 0.24 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 982 | 1482 | | 108 | 697 | 225 | | 787 | 338 | 66 | | 57 |
| v/s Ratio Prot | 0.16 | c0.33 | | 0.01 | c0.17 | | | c0.20 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.13 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.51 | 0.69 | | 0.21 | 0.72 | 0.54 | | 0.86 | 0.11 | 0.92 | | 0.04 |
| Uniform Delay, d1 | 36.9 | 26.5 | | 57.2 | 45.6 | 43.3 | | 47.4 | 38.8 | 59.6 | | 55.6 |
| Progression Factor | 0.75 | 0.21 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.89 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.9 | 1.3 | | 4.5 | 6.4 | 9.0 | | 11.4 | 0.7 | 83.9 | | 0.3 |
| Delay (s) | 28.5 | 6.9 | | 61.6 | 52.0 | 52.3 | | 56.2 | 35.3 | 143.5 | | 55.9 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 13.9 | | | 52.3 | | | 54.4 | | | 112.7 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.1 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | 13.0 | | | |
| Intersection Capacity Utilization | | | 71.9% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 874 | 231 | 61 | 624 | 0 | 126 | 0 | 111 | 3 | 27 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2852 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1961 | |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2852 | | 275 | 3005 | | 1078 | | 1465 | 1803 | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 971 | 257 | 68 | 693 | 0 | 140 | 0 | 123 | 3 | 30 | 2 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1204 | 0 | 68 | 693 | 0 | 140 | 0 | 41 | 3 | 31 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | 2 | | 2 | | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1711 | | 165 | 1803 | | 345 | | 469 | 577 | 628 | |
| v/s Ratio Prot | | c0.42 | | | 0.23 | | | | | | 0.02 | |
| v/s Ratio Perm | | | | 0.25 | | c0.13 | | | 0.03 | 0.00 | | |
| v/c Ratio | | 0.70 | | 0.41 | 0.38 | | 0.41 | | 0.09 | 0.01 | 0.05 | |
| Uniform Delay, d1 | | 13.8 | | 10.6 | 10.4 | | 26.6 | | 23.8 | 23.2 | 23.5 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.5 | | 7.4 | 0.6 | | 3.5 | | 0.4 | 0.0 | 0.1 | |
| Delay (s) | | 16.3 | | 18.1 | 11.0 | | 30.1 | | 24.2 | 23.2 | 23.6 | |
| Level of Service | | B | | B | B | | C | | C | C | C | |
| Approach Delay (s) | | 16.3 | | | 11.6 | | | 27.3 | | | 23.6 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street




















1/14/2013

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|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 332 | 39 | 1048 | 199 | 896 | 0 | 0 | 450 | 736 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3931 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3931 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 339 | 40 | 1069 | 203 | 914 | 0 | 0 | 459 | 751 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 339 | 40 | 1069 | 203 | 914 | 0 | 0 | 1210 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1161 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.31 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.72 | | | | | | |
| v/c Ratio | | | | 0.75 | 0.08 | 2.53 | 0.43 | 0.33 | | | 1.87dr | |
| Uniform Delay, d1 | | | | 33.5 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.65 | 2.37 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.1 | 0.3 | 694.2 | 2.0 | 0.2 | | | 38.1 | |
| Delay (s) | | | | 44.6 | 27.1 | 731.7 | 21.2 | 21.9 | | | 75.1 | |
| Level of Service | | | | D | C | F | C | C | | | E | |
| Approach Delay (s) | | 0.0 | | | 551.4 | | | 21.8 | | | 75.1 | |
| Approach LOS | | A | | | F | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 242.0 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.31 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 94.5% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  |  |
| Volume (vph) | 266 | 867 | 89 | 0 | 0 | 0 | 0 | 828 | 641 | 280 | 502 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 274 | 894 | 92 | 0 | 0 | 0 | 0 | 854 | 661 | 289 | 518 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 247 | 1006 | 0 | 0 | 0 | 0 | 0 | 854 | 661 | 289 | 518 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.18 | 0.11 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.30 | | | |
| v/c Ratio | 0.51 | 0.98 | | | | | | 0.73 | 1.13 | 0.62 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.1 | 38.5 | 31.9 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.44 | 0.46 | 1.06 | 0.43 | |
| Incremental Delay, d2 | 3.8 | 22.8 | | | | | | 0.4 | 62.5 | 2.5 | 0.1 | |
| Delay (s) | 32.5 | 57.9 | | | | | | 15.7 | 80.3 | 36.4 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 52.9 | | | 0.0 | | | 43.9 | | | 15.8 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.7 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 94.5% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|-------|--|---|------|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | |
| Lane Configurations | | | |  |  | |  |  | | |  | | | | | | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 163 | 0 | 0 | 111 | 3 | | | | | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | | | | | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | | | | | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | | | | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | | | | | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | | | | | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | | | | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | | | | | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | | | | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1960 | | | | | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | | | | | | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 788 | 1882 | | | 1960 | | | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 181 | 0 | 0 | 123 | 3 | | | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 181 | 0 | 0 | 125 | 0 | | | | | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% | | | | | |
| Turn Type | | | | Perm | | | pm+pt | | | | | | | | | | |
| Protected Phases | | | | | | | 8 | | | 7 | | | 2 | | 6 | | |
| Permitted Phases | | | | 8 | | | | | | 2 | | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | | | 861 | | | 504 | | | 1107 | | | 1061 | |
| v/s Ratio Prot | | | | | | | 0.00 | | | 0.00 | | | c0.10 | | | 0.06 | |
| v/s Ratio Perm | | | | c0.15 | | | | | | 0.00 | | | | | | | |
| v/c Ratio | | | | 0.48 | | | 0.01 | | | 0.01 | | | 0.16 | | | 0.12 | |
| Uniform Delay, d1 | | | | 23.4 | | | 19.9 | | | 9.9 | | | 8.0 | | | 9.6 | |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.06 | | | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | | | 0.0 | | | 0.0 | | | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.7 | | | 19.9 | | | 10.5 | | | 9.7 | | | 9.8 | |
| Level of Service | | | | C | | | B | | | B | | | A | | | A | |
| Approach Delay (s) | 0.0 | | | | | | 26.0 | | | | | | 9.8 | | | 9.8 | |
| Approach LOS | A | | | | | | C | | | | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.3 | | | HCM Level of Service | | | B | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | | | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 8 | 0 | 18 | 0 | 140 | 41 | 33 | 296 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.91 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1603 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1509 | 1809 | | | 1558 | | | 1686 | | 1013 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 8 | 0 | 19 | 0 | 147 | 43 | 35 | 312 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 14 | 0 | 0 | 178 | 0 | 35 | 312 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 479 | 575 | | | 495 | | | 793 | | 644 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.03 | | | 0.22 | | 0.05 | 0.30 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.99 | 0.90 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.1 | | | 14.0 | | 8.6 | 8.6 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.1 | | | 14.0 | | | 8.6 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 19 | 11 | 346 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1782 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1782 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 21 | 12 | 384 | 177 | 13 |
| RTOR Reduction (vph) | 14 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 77 | 0 | 12 | 384 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 576 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.39 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.31 | 0.51 | 1.13 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.3 | 8.7 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.2 | 8.7 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.6 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↕↕ | | ↗ | ↖ | | | ↖ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 24 | 266 | 14 | 552 | 264 | 1 | 0 | 216 | 34 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3735 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.55 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3735 | | 955 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 27 | 296 | 16 | 613 | 293 | 1 | 0 | 240 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 335 | 0 | 613 | 294 | 0 | 0 | 240 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1142 | | 656 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.17 | | | 0.15 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.93 | 0.28 | | | 0.33 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.5 | 8.2 | | | 15.3 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 22.3 | 0.7 | | | 1.3 | 0.1 |
| Delay (s) | | | | | 23.1 | | 39.8 | 8.8 | | | 16.5 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 29.8 | | | 16.1 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.2% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 14 | 11 | 9 | 314 | 503 | 91 | 70 | 331 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1801 | | 1692 | 3238 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.51 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | | | | 1801 | | 905 | 3238 | | 597 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 16 | 12 | 10 | 349 | 559 | 101 | 78 | 368 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 31 | 0 | 349 | 640 | 0 | 78 | 378 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 552 | | 568 | 1468 | | 430 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.20 | | 0.02 | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.28 | | | 0.08 | | |
| v/c Ratio | | | | | 0.06 | | 0.61 | 0.44 | | 0.18 | 0.25 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.1 | 14.0 | | 11.8 | 12.6 | |
| Progression Factor | | | | | 1.00 | | 0.71 | 0.73 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 4.5 | 0.9 | | 0.9 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 13.9 | 11.1 | | 12.8 | 13.0 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 12.0 | | | 13.0 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 54 | 51 | 23 | 13 | 160 | 211 | 19 | 643 | 12 | 66 | 265 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1945 | | | 1625 | | 1596 | 3232 | | 1641 | 3132 | |
| Flt Permitted | | 0.71 | | | 0.99 | | 0.57 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | | 1411 | | | 1612 | | 961 | 3232 | | 603 | 3132 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 54 | 24 | 14 | 168 | 222 | 20 | 677 | 13 | 69 | 279 | 15 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 124 | 0 | 0 | 345 | 0 | 20 | 688 | 0 | 69 | 289 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 470 | | | 537 | | 538 | 1810 | | 338 | 1754 | |
| v/s Ratio Prot | | | | | | | | c0.21 | | | 0.09 | |
| v/s Ratio Perm | | 0.09 | | | c0.21 | | 0.02 | | | 0.11 | | |
| v/c Ratio | | 0.26 | | | 0.64 | | 0.04 | 0.38 | | 0.20 | 0.16 | |
| Uniform Delay, d1 | | 18.3 | | | 21.2 | | 7.4 | 9.2 | | 8.2 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.16 | 0.07 | |
| Incremental Delay, d2 | | 1.4 | | | 5.8 | | 0.1 | 0.6 | | 1.3 | 0.2 | |
| Delay (s) | | 19.7 | | | 27.0 | | 7.5 | 9.8 | | 2.6 | 0.8 | |
| Level of Service | | B | | | C | | A | A | | A | A | |
| Approach Delay (s) | | 19.7 | | | 27.0 | | | 9.8 | | | 1.1 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 67.1% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 43 | 54 | 100 | 311 | 198 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 48 | 60 | 111 | 346 | 220 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 108 | 226 | 230 | 147 | 94 | |
| Volume Left (vph) | 48 | 111 | 0 | 0 | 0 | |
| Volume Right (vph) | 60 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.2 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.16 | 0.34 | 0.33 | 0.22 | 0.14 | |
| Capacity (veh/h) | 631 | 655 | 686 | 647 | 666 | |
| Control Delay (s) | 9.2 | 9.9 | 9.4 | 8.6 | 7.8 | |
| Approach Delay (s) | 9.2 | 9.6 | | 8.3 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.2 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 34.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 44 | 51 | 315 | 13 | 5 | 479 | 38 | 40 | 41 | 52 | 700 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3291 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.55 | 1.00 | 1.00 | | | 0.41 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 992 | 1731 | 1487 | | | 737 | 3291 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 57 | 350 | 14 | 6 | 532 | 42 | 44 | 46 | 58 | 778 | 48 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 106 | 350 | 7 | 6 | 532 | 55 | 0 | 0 | 104 | 821 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 302 | 528 | 453 | | | 175 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.20 | | | c0.31 | | | | | c0.25 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.14 | | |
| v/c Ratio | | 0.38 | 0.42 | 0.01 | 0.02 | 1.01 | 0.12 | | | 0.59 | 1.05 | |
| Uniform Delay, d1 | | 20.2 | 18.1 | 14.5 | 25.5 | 36.5 | 26.4 | | | 35.5 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 1.6 | 0.0 | 0.1 | 41.1 | 0.6 | | | 14.0 | 45.4 | |
| Delay (s) | | 24.0 | 19.7 | 14.5 | 25.7 | 77.6 | 26.9 | | | 49.5 | 85.4 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.5 | | | 70.1 | | | | | 81.3 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.8 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 78.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 49 | 285 | 26 | 31 | 4 | 56 | 110 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3280 | | | | 1710 | 2622 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3280 | | | | 1710 | 2622 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 54 | 317 | 29 | 34 | 4 | 62 | 122 | 13 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 54 | 373 | 0 | 0 | 0 | 66 | 128 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.11 | | | | 0.04 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.05 | |
| v/c Ratio | 0.79 | 0.49 | | | | 0.23 | 0.29 | |
| Uniform Delay, d1 | 37.9 | 34.8 | | | | 37.9 | 38.3 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 61.4 | 2.2 | | | | 1.9 | 1.7 | |
| Delay (s) | 99.3 | 37.0 | | | | 39.8 | 40.0 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 44.8 | | | | 40.0 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 23 | 457 | 0 | 0 | 480 | 26 | 115 | 113 | 116 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1929 | | | 1770 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1598 | | | 1929 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 26 | 508 | 0 | 0 | 533 | 29 | 128 | 126 | 129 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 534 | 0 | 0 | 562 | 0 | 0 | 383 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 762 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.70 | | | 0.61 | | | 0.54 | | | | |
| Uniform Delay, d1 | | 13.4 | | | 12.5 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.3 | | | 3.0 | | | 3.0 | | | | |
| Delay (s) | | 18.7 | | | 15.6 | | | 17.9 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 18.7 | | | 15.6 | | | 17.9 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.63 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 72.3% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 112 | 358 | 110 | 67 | 268 | 110 | 143 | 1647 | 129 | 74 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1922 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.66 | 1.00 | | 0.60 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1286 | 1426 | | 1161 | 1396 | 627 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 377 | 116 | 71 | 282 | 116 | 151 | 1734 | 136 | 78 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 68 | 0 | 0 | 68 | 0 | 0 | 31 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 495 | 48 | 0 | 353 | 48 | 151 | 1734 | 105 | 78 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 527 | 584 | | 475 | 572 | 389 | 1307 | 542 | 148 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.56 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.38 | 0.03 | | 0.30 | 0.03 | 0.16 | | 0.08 | 0.21 | | 0.03 |
| v/c Ratio | | 0.94 | 0.08 | | 0.74 | 0.08 | 0.39 | 1.33 | 0.19 | 0.53 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 29.7 | 18.9 | | 26.3 | 18.9 | 14.7 | 30.4 | 19.1 | 23.2 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.14 | 0.78 | 0.44 |
| Incremental Delay, d2 | | 24.7 | 0.3 | | 10.1 | 0.3 | 0.6 | 152.4 | 0.8 | 3.3 | 0.9 | 0.3 |
| Delay (s) | | 54.4 | 19.2 | | 36.4 | 19.2 | 15.3 | 182.8 | 19.9 | 29.7 | 18.2 | 8.8 |
| Level of Service | | D | B | | D | B | B | F | B | C | B | A |
| Approach Delay (s) | | 47.7 | | | 32.2 | | | 159.3 | | | 18.2 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 100.9 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.09 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 110.9% | | | ICU Level of Service | | | H | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 56 | 492 | 56 | 50 | 393 | 48 | 64 | 59 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1629 | | | 1627 | | | 1770 | | | | |
| Flt Permitted | | 0.92 | | | 0.90 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1503 | | | 1468 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 547 | 62 | 56 | 437 | 53 | 71 | 66 | 69 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 665 | 0 | 0 | 540 | 0 | 0 | 178 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 879 | | | 858 | | | 517 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.44 | | | 0.37 | | | 0.10 | | | | |
| v/c Ratio | | 0.76 | | | 0.63 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 10.1 | | | 8.9 | | | 18.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.0 | | | 3.5 | | | 1.8 | | | | |
| Delay (s) | | 16.1 | | | 12.4 | | | 19.9 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 16.1 | | | 12.4 | | | 19.9 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 22 | 523 | 62 | 33 | 400 | 40 | 45 | 146 | 94 | 56 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1633 | 1288 | | 1663 | 1490 | | 1774 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.89 | 1.00 | | 0.90 | |
| Satd. Flow (perm) | | 1620 | 1255 | | 1540 | 1288 | | 1495 | 1490 | | 1615 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 23 | 551 | 65 | 35 | 421 | 42 | 47 | 154 | 99 | 59 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 28 | 0 | 0 | 17 | 0 | 0 | 67 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 574 | 37 | 0 | 456 | 25 | 0 | 201 | 32 | 0 | 283 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 929 | 720 | | 883 | 738 | | 478 | 477 | | 517 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.03 | | 0.30 | 0.02 | | 0.13 | 0.02 | | c0.18 | |
| v/c Ratio | | 0.62 | 0.05 | | 0.52 | 0.03 | | 0.42 | 0.07 | | 0.55 | |
| Uniform Delay, d1 | | 10.6 | 7.0 | | 9.7 | 7.0 | | 20.0 | 17.7 | | 21.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.1 | 0.1 | | 2.2 | 0.1 | | 2.7 | 0.3 | | 4.1 | |
| Delay (s) | | 13.6 | 7.2 | | 11.9 | 7.0 | | 22.7 | 18.0 | | 25.2 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.0 | | | 11.4 | | | 21.2 | | | 25.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 90.4% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 81 | 480 | 28 | 19 | 290 | 39 | 52 | 302 | 45 | 41 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1463 | 2993 | | 1459 | 3530 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.53 | 1.00 | | 0.40 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 821 | 2993 | | 617 | 3530 | | 1116 | 1647 | 1301 | 722 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 533 | 31 | 21 | 322 | 43 | 58 | 336 | 50 | 46 | 102 | 10 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 16 | 0 | 0 | 0 | 26 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 90 | 558 | 0 | 21 | 349 | 0 | 58 | 336 | 24 | 46 | 102 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 392 | 1427 | | 294 | 1684 | | 446 | 659 | 520 | 289 | 616 | 462 |
| v/s Ratio Prot | | c0.19 | | | 0.10 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.23 | 0.39 | | 0.07 | 0.21 | | 0.13 | 0.51 | 0.05 | 0.16 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 10.9 | | 9.2 | 9.9 | | 12.3 | 14.7 | 11.9 | 12.5 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.65 | 0.79 | 0.39 | 0.56 | 0.55 | 0.31 |
| Incremental Delay, d2 | 1.4 | 0.8 | | 0.5 | 0.3 | | 0.6 | 2.8 | 0.2 | 1.2 | 0.6 | 0.0 |
| Delay (s) | 11.3 | 11.7 | | 9.7 | 10.1 | | 8.6 | 14.3 | 4.8 | 8.1 | 7.5 | 3.6 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.7 | | | 10.1 | | | 12.5 | | | 7.4 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 167 | 391 | 79 | 43 | 259 | 103 | 62 | 385 | 43 | 65 | 157 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 3059 | | 1588 | 2937 | | 1542 | 3027 | | 1404 | 2759 | |
| Flt Permitted | 0.51 | 1.00 | | 0.44 | 1.00 | | 0.61 | 1.00 | | 0.45 | 1.00 | |
| Satd. Flow (perm) | 792 | 3059 | | 730 | 2937 | | 985 | 3027 | | 665 | 2759 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 176 | 412 | 83 | 45 | 273 | 108 | 65 | 405 | 45 | 68 | 165 | 67 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 176 | 495 | 0 | 45 | 381 | 0 | 65 | 439 | 0 | 68 | 193 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 380 | 1468 | | 350 | 1410 | | 407 | 1251 | | 275 | 1140 | |
| v/s Ratio Prot | 0.16 | | | 0.13 | | | 0.14 | | | 0.07 | | |
| v/s Ratio Perm | 0.22 | | | 0.06 | | | 0.07 | | | 0.10 | | |
| v/c Ratio | 0.46 | 0.34 | | 0.13 | 0.27 | | 0.16 | 0.35 | | 0.25 | 0.17 | |
| Uniform Delay, d1 | 13.0 | 12.1 | | 10.8 | 11.7 | | 13.8 | 15.1 | | 14.4 | 13.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.0 | 0.6 | | 0.8 | 0.5 | | 0.8 | 0.8 | | 2.1 | 0.3 | |
| Delay (s) | 17.1 | 12.7 | | 11.6 | 12.1 | | 14.7 | 15.9 | | 16.5 | 14.2 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 13.9 | | | 12.1 | | | 15.7 | | | 14.7 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 53.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 107 | 315 | 36 | 23 | 334 | 46 | 65 | 397 | 25 | 41 | 196 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1473 | 1842 | | 1533 | 3073 | | 1372 | 2865 | |
| Flt Permitted | 0.44 | 1.00 | | 0.48 | 1.00 | | 0.59 | 1.00 | | 0.43 | 1.00 | |
| Satd. Flow (perm) | 711 | 1576 | | 737 | 1842 | | 945 | 3073 | | 622 | 2865 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 113 | 332 | 38 | 24 | 352 | 48 | 68 | 418 | 26 | 43 | 206 | 64 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 113 | 370 | 0 | 24 | 400 | 0 | 68 | 444 | 0 | 43 | 270 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 443 | 738 | | 369 | 793 | | 330 | 730 | | 199 | 627 | |
| v/s Ratio Prot | c0.02 | c0.23 | | 0.00 | 0.22 | | c0.01 | c0.14 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.05 | | | 0.05 | | |
| v/c Ratio | 0.26 | 0.50 | | 0.07 | 0.50 | | 0.21 | 0.61 | | 0.22 | 0.43 | |
| Uniform Delay, d1 | 13.6 | 15.7 | | 14.6 | 17.6 | | 21.5 | 28.9 | | 25.7 | 28.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.4 | | 0.1 | 2.3 | | 0.3 | 3.7 | | 0.5 | 2.2 | |
| Delay (s) | 13.9 | 18.1 | | 14.7 | 19.9 | | 21.8 | 32.6 | | 26.2 | 30.8 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.2 | | | 19.6 | | | 31.2 | | | 30.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 63.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 68 | 305 | 42 | 63 | 372 | 111 | 56 | 370 | 120 | 55 | 158 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3492 | | | 2913 | | 1614 | 3156 | | 1580 | 2900 | |
| Flt Permitted | | 0.78 | | | 0.85 | | 0.61 | 1.00 | | 0.40 | 1.00 | |
| Satd. Flow (perm) | | 2753 | | | 2480 | | 1038 | 3156 | | 658 | 2900 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 339 | 47 | 70 | 413 | 123 | 62 | 411 | 133 | 61 | 176 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 462 | 0 | 0 | 606 | 0 | 62 | 544 | 0 | 61 | 225 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1248 | | | 1124 | | 457 | 1389 | | 290 | 1276 | |
| v/s Ratio Prot | | | | | | | c0.17 | | | | 0.08 | |
| v/s Ratio Perm | | 0.17 | | | c0.24 | | 0.06 | | | 0.09 | | |
| v/c Ratio | | 0.37 | | | 0.54 | | 0.14 | 0.39 | | 0.21 | 0.18 | |
| Uniform Delay, d1 | | 13.5 | | | 14.8 | | 12.5 | 14.2 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | | 1.9 | | 0.6 | 0.8 | | 1.6 | 0.3 | |
| Delay (s) | | 14.3 | | | 16.7 | | 13.1 | 15.0 | | 14.6 | 13.1 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.3 | | | 16.7 | | | 14.8 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.47 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 62.5% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 138 | 496 | 5 | 14 | 634 | 371 | 68 | 9 | 19 | 112 | 1 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3143 | | 1629 | 3257 | 1457 | | 1612 | | | 3106 | |
| Flt Permitted | 0.36 | 1.00 | | 0.44 | 1.00 | 1.00 | | 0.70 | | | 0.75 | |
| Satd. Flow (perm) | 604 | 3143 | | 748 | 3257 | 1457 | | 1174 | | | 2411 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 153 | 551 | 6 | 16 | 704 | 412 | 76 | 10 | 21 | 124 | 1 | 54 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 143 | 0 | 12 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 153 | 556 | 0 | 16 | 704 | 269 | 0 | 95 | 0 | 0 | 138 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.23 | | | 0.23 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 395 | 2054 | | 489 | 2128 | 952 | | 273 | | | 562 | |
| v/s Ratio Prot | 0.18 | | | 0.22 | | | | | | | | |
| v/s Ratio Perm | c0.25 | | | 0.02 | | 0.18 | | c0.08 | | | 0.06 | |
| v/c Ratio | 0.39 | 0.27 | | 0.03 | 0.33 | 0.28 | | 0.35 | | | 0.24 | |
| Uniform Delay, d1 | 5.7 | 5.1 | | 4.3 | 5.4 | 5.2 | | 22.5 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.9 | 0.3 | | 0.1 | 0.4 | 0.7 | | 3.3 | | | 1.0 | |
| Delay (s) | 8.5 | 5.5 | | 4.4 | 5.8 | 5.9 | | 25.8 | | | 22.9 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.1 | | | 5.8 | | | | 25.8 | | | 22.9 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.4 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.38 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.4 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 54.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 79 | 63 | 190 | 71 | 128 | 1887 | 84 | 70 | 494 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1496 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.31 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1496 | | 513 | 1584 | | 617 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 83 | 66 | 200 | 75 | 135 | 1986 | 88 | 74 | 520 | 43 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 292 | 0 | 66 | 259 | 0 | 135 | 1986 | 70 | 74 | 520 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 387 | | 230 | 410 | | 352 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.20 | | 0.02 | 0.16 | | 0.03 | c0.65 | | c0.03 | 0.17 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.15 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.76 | | 0.29 | 0.63 | | 0.38 | 1.57 | 0.13 | 0.43 | 0.42 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.70 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.9 | | 3.1 | 7.2 | | 2.6 | 260.3 | 0.4 | 7.4 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.9 | | 25.0 | 35.2 | | 10.8 | 277.9 | 8.0 | 25.6 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 38.2 | | | 33.2 | | | 250.8 | | | 19.4 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 164.4 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.12 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | | |
| Intersection Capacity Utilization | | 94.2% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 217 | 32 | 15 | 149 | 16 | 22 | 162 | 26 | 32 | 144 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1836 | | | 1839 | | | 1899 | | | 1930 | |
| Flt Permitted | | 0.97 | | | 0.97 | | | 0.96 | | | 0.94 | |
| Satd. Flow (perm) | | 1782 | | | 1792 | | | 1839 | | | 1823 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 224 | 33 | 15 | 154 | 16 | 23 | 167 | 27 | 33 | 148 | 22 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 277 | 0 | 0 | 180 | 0 | 0 | 209 | 0 | 0 | 196 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 849 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.37 | | | 0.24 | | | 0.25 | | | 0.23 | |
| Uniform Delay, d1 | | 13.2 | | | 12.3 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.12 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 0.8 | | | 0.7 | | | 0.6 | |
| Delay (s) | | 14.6 | | | 8.7 | | | 12.5 | | | 11.2 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.6 | | | 8.7 | | | 12.5 | | | 11.2 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 37 | 9 | 162 | 23 | 43 | 364 | 31 | 17 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 2989 | | 1302 | 3018 | | 1529 | 3094 | | 1492 | 2868 | |
| Flt Permitted | 0.62 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 960 | 2989 | | 825 | 3018 | | 1093 | 3094 | | 781 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 41 | 10 | 180 | 26 | 48 | 404 | 34 | 19 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 18 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 216 | 0 | 10 | 188 | 0 | 48 | 428 | 0 | 19 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 281 | 874 | | 241 | 882 | | 639 | 1809 | | 457 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.24 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.4 | | 5.9 | 6.5 | | 5.7 | 5.8 | |
| Progression Factor | 0.72 | 0.72 | | 0.76 | 0.74 | | 0.93 | 0.96 | | 0.51 | 0.45 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.7 | 13.3 | | 12.9 | 13.4 | | 5.7 | 6.6 | | 3.1 | 2.7 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.2 | | | 13.4 | | | 6.5 | | | 2.8 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 39 | 28 | 429 | 24 | 14 | 178 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2866 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1046 | 2952 | | 965 | 2866 | | | 1838 | | | 1742 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 43 | 31 | 477 | 27 | 16 | 198 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 26 | 0 | 0 | 3 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 532 | 0 | 0 | 227 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 418 | 1181 | | 386 | 1146 | | | 877 | | | 831 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.29 | | | 0.13 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.61 | | | 0.27 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.5 | | | 10.2 | |
| Progression Factor | 1.03 | 0.93 | | 0.88 | 0.88 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 3.0 | | | 0.8 | |
| Delay (s) | 13.2 | 12.1 | | 10.7 | 11.1 | | | 15.4 | | | 11.0 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.3 | | | 11.1 | | | 15.4 | | | 11.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 60.5% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 86 | 121 | 61 | 2 | 80 | 34 | 22 | 272 | 9 | 7 | 175 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1874 | | 1587 | 1870 | | | 1970 | | | 1932 | |
| Flt Permitted | 0.68 | 1.00 | | 0.58 | 1.00 | | | 0.97 | | | 0.99 | |
| Satd. Flow (perm) | 1141 | 1874 | | 965 | 1870 | | | 1926 | | | 1915 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 134 | 68 | 2 | 89 | 38 | 24 | 302 | 10 | 8 | 194 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 96 | 202 | 0 | 2 | 127 | 0 | 0 | 336 | 0 | 0 | 233 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 351 | 577 | | 297 | 575 | | | 1096 | | | 1090 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.00 | | | | c0.17 | | | 0.12 | |
| v/c Ratio | 0.27 | 0.35 | | 0.01 | 0.22 | | | 0.31 | | | 0.21 | |
| Uniform Delay, d1 | 17.0 | 17.5 | | 15.6 | 16.7 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.91 | 0.90 | | 0.87 | 0.92 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 1.9 | 1.7 | | 0.0 | 0.9 | | | 0.7 | | | 0.4 | |
| Delay (s) | 17.3 | 17.3 | | 13.7 | 16.3 | | | 7.9 | | | 7.3 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.3 | | | 16.2 | | | 7.9 | | | 7.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 116 | 9 | 52 | 1 | 3 | 12 | 38 | 467 | 6 | 2 | 191 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1673 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.63 | 1.00 | 1.00 | 0.39 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1673 | | 1283 | 1422 | | 981 | 1631 | 1392 | 682 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 129 | 10 | 58 | 1 | 3 | 13 | 42 | 519 | 7 | 2 | 212 | 53 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 129 | 26 | 0 | 1 | 7 | 0 | 42 | 519 | 4 | 2 | 212 | 32 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 355 | 394 | | 589 | 979 | 835 | 409 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.32 | | | 0.11 | |
| v/s Ratio Perm | c0.10 | | | 0.00 | | | 0.04 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.37 | 0.06 | | 0.00 | 0.02 | | 0.07 | 0.53 | 0.01 | 0.00 | 0.19 | 0.04 |
| Uniform Delay, d1 | 18.9 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.6 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.38 | | 1.00 | 1.00 | | 1.14 | 1.07 | 1.32 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.9 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.6 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 30.7 | 41.2 | | 17.0 | 17.1 | | 6.4 | 9.8 | 6.9 | 5.2 | 6.2 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 34.3 | | | 17.1 | | | 9.5 | | | 6.0 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013








| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 241 | 76 | 119 | 362 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 846 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 254 | 80 | 125 | 381 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 304 | 0 | 125 | 381 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 652 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.04 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.06 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.19 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.5 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.94 | 2.04 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.0 | 19.6 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.0 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|---|---|---|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 186 | 0 | 0 | 309 | 66 | 171 | 544 | 320 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 641 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 196 | 0 | 0 | 325 | 69 | 180 | 573 | 337 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 226 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 196 | 0 | 0 | 376 | 0 | 180 | 573 | 111 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 687 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.13 | | 0.10 | c0.32 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.63 | | 0.31 | 0.97 | 0.22 | | | |
| Uniform Delay, d1 | 11.7 | 9.4 | | | 36.0 | | 25.0 | 33.1 | 24.2 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.74 | 0.79 | 1.92 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.0 | | 0.9 | 24.4 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 41.0 | | 19.5 | 50.4 | 47.2 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 41.0 | | | 44.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.0 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 450 | 362 | 34 | 587 | 0 | 0 | 0 | 0 | 4 | 215 | 195 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3109 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3109 | | 299 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 469 | 377 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 224 | 203 |
| RTOR Reduction (vph) | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Lane Group Flow (vph) | 0 | 700 | 0 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 224 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1119 | | 398 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.63 | | 0.09 | 0.32 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.4 | | 12.4 | 10.8 | | | | | 21.8 | 23.4 | 22.9 |
| Progression Factor | | 1.00 | | 0.55 | 0.68 | | | | | 0.74 | 0.79 | 0.94 |
| Incremental Delay, d2 | | 2.6 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.1 | | 6.9 | 7.6 | | | | | 16.1 | 19.0 | 22.0 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.1 | | | 7.5 | | | 0.0 | | | 20.4 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

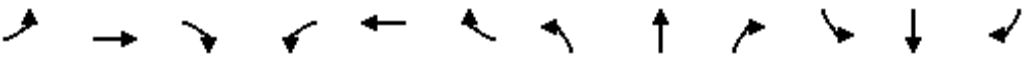
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 395 | 59 | 0 | 0 | 57 | 5 | 564 | 636 | 61 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2339 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 407 | 61 | 0 | 0 | 59 | 5 | 581 | 656 | 63 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 203 | 265 | 0 | 0 | 60 | 0 | 581 | 656 | 25 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1446 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.37 | c0.40 | 0.02 | | | |
| v/s Ratio Perm | c0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.18 | | | 0.13 | | 1.01 | 1.08 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.2 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 40.1 | 60.9 | 0.2 | | | |
| Delay (s) | 4.2 | 3.6 | | | 37.4 | | 71.6 | 92.4 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.8 | | | 37.4 | | | 79.6 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.8 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 155 | 271 | 66 | 58 | 180 | 111 | 41 | 1100 | 69 | 100 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2842 | | | 2770 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.67 | | | 0.80 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1943 | | | 2244 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 161 | 282 | 69 | 60 | 188 | 116 | 43 | 1146 | 72 | 104 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 64 | 0 | 0 | 0 | 28 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 498 | 0 | 0 | 300 | 0 | 43 | 1146 | 44 | 104 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 886 | | | 739 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.37 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.20 | | | 0.13 | | 0.06 | | 0.03 | 0.27 | | 0.01 |
| v/c Ratio | | 0.56 | | | 0.41 | | 0.15 | 0.95 | 0.08 | 0.72 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.5 | | | 22.1 | | 14.7 | 24.9 | 16.4 | 18.7 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.30 | 0.85 | 1.38 | 1.82 | 1.63 | 3.12 |
| Incremental Delay, d2 | | 2.6 | | | 1.7 | | 0.6 | 11.2 | 0.2 | 24.7 | 1.0 | 0.1 |
| Delay (s) | | 21.1 | | | 23.7 | | 19.8 | 32.3 | 22.9 | 58.6 | 31.6 | 50.4 |
| Level of Service | | C | | | C | | B | C | C | E | C | D |
| Approach Delay (s) | | 21.1 | | | 23.7 | | | 31.3 | | | 37.3 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 29.8 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.67 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | | |
| Intersection Capacity Utilization | | 79.8% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 42 | 421 | 0 | 0 | 322 | 81 | 27 | 60 | 110 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1668 | | | 1575 | | | | |
| Flt Permitted | | 0.94 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1604 | | | 1668 | | | 1575 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 47 | 468 | 0 | 0 | 358 | 90 | 30 | 67 | 122 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 70 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 515 | 0 | 0 | 434 | 0 | 0 | 149 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 839 | | | 872 | | | 557 | | | | |
| v/s Ratio Prot | | | | | 0.26 | | | | | | | |
| v/s Ratio Perm | | 0.32 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.61 | | | 0.50 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 10.9 | | | 10.0 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.54 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.3 | | | 1.8 | | | 1.2 | | | | |
| Delay (s) | | 14.2 | | | 7.2 | | | 16.2 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 14.2 | | | 7.2 | | | 16.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 43 | 438 | 29 | 22 | 338 | 51 | 15 | 167 | 45 | 67 | 105 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 1889 | | | 1831 | | | 3160 | | | 3148 | |
| Flt Permitted | | 0.94 | | | 0.96 | | | 0.93 | | | 0.80 | |
| Satd. Flow (perm) | | 1778 | | | 1766 | | | 2961 | | | 2549 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 48 | 487 | 32 | 24 | 376 | 57 | 17 | 186 | 50 | 74 | 117 | 21 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 8 | 0 | 0 | 29 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 0 | 0 | 449 | 0 | 0 | 224 | 0 | 0 | 200 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 821 | | | 815 | | | 1230 | | | 1059 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | | | 0.25 | | | 0.08 | | | c0.08 | |
| v/c Ratio | | 0.69 | | | 0.55 | | | 0.18 | | | 0.19 | |
| Uniform Delay, d1 | | 13.8 | | | 12.6 | | | 12.0 | | | 12.1 | |
| Progression Factor | | 0.63 | | | 0.51 | | | 0.94 | | | 0.72 | |
| Incremental Delay, d2 | | 3.9 | | | 2.6 | | | 0.3 | | | 0.4 | |
| Delay (s) | | 12.6 | | | 9.0 | | | 11.6 | | | 9.1 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 12.6 | | | 9.0 | | | 11.6 | | | 9.1 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 78.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 48 | 341 | 19 | 29 | 302 | 64 | 44 | 303 | 88 | 58 | 91 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1502 | 2949 | | 1585 | 2934 | | 1497 | 3030 | | 1594 | 2941 | |
| Flt Permitted | 0.47 | 1.00 | | 0.48 | 1.00 | | 0.67 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 744 | 2949 | | 795 | 2934 | | 1063 | 3030 | | 829 | 2941 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 379 | 21 | 32 | 336 | 71 | 49 | 337 | 98 | 64 | 101 | 21 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 42 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 53 | 394 | 0 | 32 | 379 | 0 | 49 | 393 | 0 | 64 | 112 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 252 | 998 | | 269 | 993 | | 572 | 1632 | | 446 | 1584 | |
| v/s Ratio Prot | c0.13 | | | 0.13 | | | c0.13 | | | 0.04 | | |
| v/s Ratio Perm | 0.07 | | | 0.04 | | | 0.05 | | | 0.08 | | |
| v/c Ratio | 0.21 | 0.39 | | 0.12 | 0.38 | | 0.09 | 0.24 | | 0.14 | 0.07 | |
| Uniform Delay, d1 | 15.3 | 16.4 | | 14.8 | 16.3 | | 7.3 | 8.0 | | 7.5 | 7.2 | |
| Progression Factor | 0.63 | 0.63 | | 0.85 | 0.85 | | 0.72 | 0.74 | | 1.36 | 1.36 | |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.9 | 1.1 | | 0.3 | 0.3 | | 0.7 | 0.1 | |
| Delay (s) | 11.2 | 11.3 | | 13.4 | 14.9 | | 5.5 | 6.2 | | 10.8 | 9.9 | |
| Level of Service | B | B | | B | B | | A | A | | B | A | |
| Approach Delay (s) | 11.3 | | | 14.8 | | | 6.1 | | | 10.2 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 79 | 361 | 130 | 100 | 315 | 82 | 37 | 323 | 60 | 41 | 136 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 2931 | | 1336 | 3524 | | | 3413 | | | 3314 | |
| Flt Permitted | 0.50 | 1.00 | | 0.43 | 1.00 | | | 0.91 | | | 0.84 | |
| Satd. Flow (perm) | 720 | 2931 | | 605 | 3524 | | | 3133 | | | 2806 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 83 | 380 | 137 | 105 | 332 | 86 | 39 | 340 | 63 | 43 | 143 | 40 |
| RTOR Reduction (vph) | 0 | 56 | 0 | 0 | 36 | 0 | 0 | 20 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 83 | 461 | 0 | 105 | 382 | 0 | 0 | 422 | 0 | 0 | 202 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 343 | 1398 | | 289 | 1681 | | | 1253 | | | 1122 | |
| v/s Ratio Prot | 0.16 | | | 0.11 | | | | | | | | |
| v/s Ratio Perm | 0.12 | | | c0.17 | | | | c0.13 | | | 0.07 | |
| v/c Ratio | 0.24 | 0.33 | | 0.36 | 0.23 | | | 0.34 | | | 0.18 | |
| Uniform Delay, d1 | 10.1 | 10.6 | | 10.8 | 10.0 | | | 13.5 | | | 12.6 | |
| Progression Factor | 1.67 | 1.90 | | 0.76 | 0.70 | | | 0.52 | | | 0.64 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 3.1 | 0.3 | | | 0.7 | | | 0.3 | |
| Delay (s) | 18.4 | 20.6 | | 11.2 | 7.3 | | | 7.6 | | | 8.4 | |
| Level of Service | B | C | | B | A | | | A | | | A | |
| Approach Delay (s) | 20.3 | | | 8.1 | | | 7.6 | | | 8.4 | | |
| Approach LOS | C | | | A | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 61.6% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 94 | 292 | 94 | 104 | 370 | 104 | 78 | 80 | 84 | 84 | 80 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3036 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.77 | | | 0.81 | | | 0.79 | |
| Satd. Flow (perm) | | 1230 | 1409 | | 2365 | | | 1503 | | | 1474 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 104 | 324 | 104 | 116 | 411 | 116 | 87 | 89 | 93 | 93 | 89 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 29 | 0 | 0 | 29 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 428 | 54 | 0 | 614 | 0 | 0 | 240 | 0 | 0 | 243 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 643 | 737 | | 1237 | | | 486 | | | 476 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.04 | | 0.26 | | | 0.16 | | | c0.16 | |
| v/c Ratio | | 0.67 | 0.07 | | 0.50 | | | 0.49 | | | 0.51 | |
| Uniform Delay, d1 | | 11.3 | 7.7 | | 10.0 | | | 17.7 | | | 17.8 | |
| Progression Factor | | 1.75 | 4.51 | | 0.42 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 5.2 | 0.2 | | 1.3 | | | 3.6 | | | 3.9 | |
| Delay (s) | | 25.1 | 34.8 | | 5.5 | | | 21.3 | | | 21.7 | |
| Level of Service | | C | C | | A | | | C | | | C | |
| Approach Delay (s) | | 27.0 | | | 5.5 | | | 21.3 | | | 21.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 71.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 71 | 367 | 21 | 15 | 450 | 63 | 40 | 103 | 41 | 41 | 86 | 97 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3017 | | 1572 | 3003 | | | 3457 | | | 3397 | |
| Flt Permitted | 0.38 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 597 | 3017 | | 790 | 3003 | | | 3016 | | | 3015 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 79 | 408 | 23 | 17 | 500 | 70 | 44 | 114 | 46 | 46 | 96 | 108 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 60 | 0 |
| Lane Group Flow (vph) | 79 | 425 | 0 | 17 | 553 | 0 | 0 | 179 | 0 | 0 | 190 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 257 | 1300 | | 340 | 1294 | | | 1346 | | | 1345 | |
| v/s Ratio Prot | | 0.14 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.06 | | | c0.06 | |
| v/c Ratio | 0.31 | 0.33 | | 0.05 | 0.43 | | | 0.13 | | | 0.14 | |
| Uniform Delay, d1 | 12.1 | 12.3 | | 10.8 | 12.9 | | | 10.6 | | | 10.6 | |
| Progression Factor | 0.98 | 1.00 | | 1.12 | 0.95 | | | 1.04 | | | 0.85 | |
| Incremental Delay, d2 | 2.4 | 0.5 | | 0.2 | 0.6 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.3 | 12.8 | | 12.2 | 12.8 | | | 11.3 | | | 9.3 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.0 | | | 12.8 | | | 11.3 | | | 9.3 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 82 | 435 | 70 | 89 | 446 | 270 | 49 | 315 | 87 | 211 | 151 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3076 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.65 | | | 0.76 | | | 0.87 | | | 0.63 | |
| Satd. Flow (perm) | | 2093 | | | 2349 | | | 2766 | | | 2027 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 91 | 483 | 78 | 99 | 496 | 300 | 54 | 350 | 97 | 234 | 168 | 56 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 97 | 0 | 0 | 32 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 636 | 0 | 0 | 798 | 0 | 0 | 469 | 0 | 0 | 441 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 837 | | | 940 | | | 1269 | | | 624 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.30 | | | c0.34 | | | 0.13 | | | c0.22 | |
| v/c Ratio | | 0.76 | | | 0.85 | | | 0.37 | | | 0.89dl | |
| Uniform Delay, d1 | | 16.8 | | | 17.7 | | | 11.9 | | | 19.9 | |
| Progression Factor | | 1.75 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 6.3 | | | 9.4 | | | 0.8 | | | 6.6 | |
| Delay (s) | | 35.7 | | | 27.1 | | | 12.8 | | | 24.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 35.7 | | | 27.1 | | | 12.8 | | | 24.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 26.0 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.77 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 85.3% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 687 | 115 | 43 | 721 | 0 | 135 | 0 | 66 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2974 | | | 3031 | | | 1585 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2974 | | | 2566 | | | 1307 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 763 | 128 | 48 | 801 | 0 | 150 | 0 | 73 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 873 | 0 | 0 | 849 | 0 | 0 | 203 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1917 | | | 941 | | | 232 | | | | | |
| v/s Ratio Prot | c0.29 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | c0.16 | | | | | |
| v/c Ratio | 0.46 | | | 0.90 | | | 0.88 | | | | | |
| Uniform Delay, d1 | 8.1 | | | 27.0 | | | 36.0 | | | | | |
| Progression Factor | 0.01 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 12.2 | | | 34.1 | | | | | |
| Delay (s) | 0.5 | | | 54.5 | | | 70.1 | | | | | |
| Level of Service | A | | | D | | | E | | | | | |
| Approach Delay (s) | 0.5 | | | 54.5 | | | 70.1 | | | 0.0 | | |
| Approach LOS | A | | | D | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 31.8 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.77 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 70.9% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 117 | 476 | 177 | 260 | 613 | 174 | 98 | 19 | 176 | 74 | 7 | 73 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.33 | 1.00 | | 0.23 | 1.00 | 1.00 | | 0.89 | | 0.41 | 1.00 | 1.00 |
| Satd. Flow (perm) | 529 | 3020 | | 400 | 3257 | 1457 | | 1581 | | 698 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 130 | 529 | 197 | 289 | 681 | 193 | 109 | 21 | 196 | 82 | 8 | 81 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 98 | 0 | 74 | 0 | 0 | 0 | 44 |
| Lane Group Flow (vph) | 130 | 686 | 0 | 289 | 681 | 95 | 0 | 252 | 0 | 82 | 8 | 37 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 41.9 | 32.6 | | 48.2 | 35.9 | 44.5 | | 20.2 | | 31.8 | 31.8 | 41.1 |
| Effective Green, g (s) | 41.9 | 32.6 | | 48.2 | 35.9 | 44.5 | | 20.2 | | 31.8 | 31.8 | 41.1 |
| Actuated g/C Ratio | 0.47 | 0.36 | | 0.54 | 0.40 | 0.49 | | 0.22 | | 0.35 | 0.35 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 1094 | | 386 | 1299 | 720 | | 355 | | 336 | 606 | 665 |
| v/s Ratio Prot | 0.04 | 0.23 | | c0.10 | 0.21 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.16 | | 0.06 | | 0.02 |
| v/c Ratio | 0.37 | 0.63 | | 0.75 | 0.52 | 0.13 | | 0.71 | | 0.24 | 0.01 | 0.06 |
| Uniform Delay, d1 | 14.2 | 23.7 | | 13.6 | 20.6 | 12.3 | | 32.2 | | 21.4 | 18.9 | 13.6 |
| Progression Factor | 1.92 | 1.62 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.8 | 2.5 | | 8.2 | 1.5 | 0.1 | | 7.0 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 28.2 | 40.7 | | 21.9 | 22.1 | 12.4 | | 39.2 | | 21.8 | 18.9 | 13.7 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 38.8 | | | 20.4 | | | 39.2 | | | 17.8 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 71.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 491 | 234 | 6 | 504 | 0 | 0 | 0 | 0 | 30 | 0 | 543 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 546 | 260 | 7 | 560 | 0 | 0 | 0 | 0 | 33 | 0 | 603 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 560 | | | 546 | | | 839 | 1119 | 273 | 846 | 1119 | 280 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 560 | | | 546 | | | 839 | 1119 | 273 | 846 | 1119 | 280 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 87 | 100 | 15 | | | | | | | |
| cM capacity (veh/h) | 987 | | | 999 | | | 37 | 200 | 716 | 249 | 200 | 708 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 273 | 273 | 260 | 193 | 373 | 33 | 603 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 33 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 260 | 0 | 0 | 0 | 603 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 999 | 1700 | 249 | 708 | | | | | | | | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.15 | 0.01 | 0.22 | 0.13 | 0.85 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 11 | 246 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 21.7 | 32.1 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | D | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 31.5 | | | | | | | | | | | | |
| Approach LOS | | | | | | D | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 10.0 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 57.0% | | ICU Level of Service | | | | B | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 521 | 0 | 510 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 579 | 0 | 567 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 289 | 289 | 567 | | | |
| Volume Left (vph) | 289 | 289 | 567 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 5.7 | | | |
| Degree Utilization, x | 0.55 | 0.55 | 0.90 | | | |
| Capacity (veh/h) | 514 | 505 | 627 | | | |
| Control Delay (s) | 16.7 | 16.7 | 38.6 | | | |
| Approach Delay (s) | 16.7 | | 38.6 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 27.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 52.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 373 | 46 | 130 | 332 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3097 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.43 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3097 | | 706 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 414 | 51 | 144 | 369 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 454 | 0 | 144 | 369 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1312 | | 509 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.15 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.35 | | 0.28 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.5 | | 11.9 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.28 | 0.23 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.3 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.3 | | 4.6 | 2.2 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.3 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 34.9% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 377 | 0 | 0 | 413 | 76 | 49 | 65 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3076 | | | 4377 | | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 640 | 3257 | | | 3076 | | | 4377 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 419 | 0 | 0 | 459 | 84 | 54 | 72 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 419 | 0 | 0 | 525 | 0 | 0 | 147 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 478 | 1839 | | | 1267 | | | 1390 | | | | |
| v/s Ratio Prot | 0.02 | c0.13 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.23 | | | 0.41 | | | 0.11 | | | | |
| Uniform Delay, d1 | 12.3 | 9.2 | | | 17.7 | | | 20.5 | | | | |
| Progression Factor | 0.31 | 0.30 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 4.5 | 3.1 | | | 18.7 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.3 | | | 18.7 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 357 | 39 | 40 | 256 | 33 | 118 | 85 | 86 | 64 | 90 | 124 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2986 | | | 2976 | | | 1773 | | | 1752 | |
| Flt Permitted | | 0.89 | | | 0.85 | | | 0.77 | | | 0.86 | |
| Satd. Flow (perm) | | 2673 | | | 2560 | | | 1390 | | | 1527 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 397 | 43 | 44 | 284 | 37 | 131 | 94 | 96 | 71 | 100 | 138 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 45 | 0 |
| Lane Group Flow (vph) | 0 | 472 | 0 | 0 | 352 | 0 | 0 | 297 | 0 | 0 | 264 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 946 | | | 906 | | | 684 | | | 752 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | | | 0.14 | | | c0.21 | | | 0.17 | |
| v/c Ratio | | 0.50 | | | 0.39 | | | 0.43 | | | 0.35 | |
| Uniform Delay, d1 | | 16.5 | | | 15.7 | | | 10.7 | | | 10.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.9 | | | 1.3 | | | 2.0 | | | 1.3 | |
| Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.4 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 65.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 295 | 39 | 59 | 200 | 75 | 68 | 963 | 101 | 124 | 416 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1551 | 3023 | | 1593 | 3505 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.55 | 1.00 | | 0.49 | 1.00 | | 0.44 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 891 | 3023 | | 819 | 3505 | | 690 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 311 | 41 | 62 | 211 | 79 | 72 | 1014 | 106 | 131 | 438 | 82 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 45 | 0 | 0 | 0 | 65 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 178 | 340 | 0 | 62 | 245 | 0 | 72 | 1014 | 41 | 131 | 438 | 32 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 346 | 996 | | 325 | 1155 | | 330 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.11 | | 0.01 | 0.07 | | 0.01 | 0.33 | | c0.04 | 0.15 | |
| v/s Ratio Perm | c0.16 | | | 0.06 | | | 0.08 | | 0.03 | c0.34 | | 0.03 |
| v/c Ratio | 0.51 | 0.34 | | 0.19 | 0.21 | | 0.22 | 0.86 | 0.08 | 0.91 | 0.37 | 0.06 |
| Uniform Delay, d1 | 20.9 | 21.5 | | 18.6 | 20.5 | | 14.9 | 23.9 | 16.4 | 20.5 | 18.6 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.21 | 0.62 | 0.82 |
| Incremental Delay, d2 | 5.4 | 0.9 | | 1.3 | 0.4 | | 1.5 | 8.2 | 0.3 | 51.3 | 0.8 | 0.2 |
| Delay (s) | 26.3 | 22.5 | | 19.9 | 21.0 | | 16.4 | 32.1 | 16.7 | 96.4 | 12.4 | 13.5 |
| Level of Service | C | C | | B | C | | B | C | B | F | B | B |
| Approach Delay (s) | | 23.8 | | | 20.8 | | | 29.8 | | | 29.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 38 | 434 | 18 | 25 | 261 | 21 | 35 | 113 | 68 | 71 | 56 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 |
| Satd. Flow (prot) | | 1935 | 1382 | | 1947 | 1331 | | 1970 | 1452 | | 1933 | 1430 |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.92 | 1.00 | | 0.79 | 1.00 |
| Satd. Flow (perm) | | 1860 | 1382 | | 1848 | 1331 | | 1839 | 1452 | | 1579 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 457 | 19 | 26 | 275 | 22 | 37 | 119 | 72 | 75 | 59 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 42 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 0 | 497 | 9 | 0 | 301 | 10 | 0 | 156 | 30 | 0 | 134 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 858 | 638 | | 853 | 614 | | 764 | 603 | | 656 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.01 | | 0.16 | 0.01 | | 0.08 | 0.02 | | c0.08 | 0.01 |
| v/c Ratio | | 0.58 | 0.01 | | 0.35 | 0.02 | | 0.20 | 0.05 | | 0.20 | 0.03 |
| Uniform Delay, d1 | | 12.9 | 9.5 | | 11.3 | 9.5 | | 12.1 | 11.3 | | 12.1 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.38 | 0.15 | | 1.18 | 1.64 | | 0.98 | 0.82 |
| Incremental Delay, d2 | | 2.8 | 0.0 | | 1.1 | 0.0 | | 0.6 | 0.2 | | 0.7 | 0.1 |
| Delay (s) | | 15.7 | 9.5 | | 5.3 | 1.5 | | 14.9 | 18.8 | | 12.5 | 9.3 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 15.5 | | | 5.1 | | | 16.1 | | | 11.7 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 67.3% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 512 | 10 | 17 | 268 | 43 | 12 | 234 | 34 | 81 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3031 | | 1520 | 2977 | | 1520 | 2982 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.43 | 1.00 | | 0.68 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3031 | | 694 | 2977 | | 1091 | 2982 | | 891 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 569 | 11 | 19 | 298 | 48 | 13 | 260 | 38 | 90 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 20 | 0 | 0 | 18 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 578 | 0 | 19 | 326 | 0 | 13 | 280 | 0 | 90 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1492 | | 235 | 1008 | | 453 | 1239 | | 370 | 1206 | |
| v/s Ratio Prot | c0.05 | c0.19 | | | 0.11 | | | 0.09 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.03 | | | 0.01 | | | c0.10 | | |
| v/c Ratio | 0.45 | 0.39 | | 0.08 | 0.32 | | 0.03 | 0.23 | | 0.24 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 10.4 | | 14.6 | 16.0 | | 11.2 | 12.3 | | 12.4 | 11.5 | |
| Progression Factor | 1.07 | 0.60 | | 0.92 | 0.93 | | 0.55 | 0.58 | | 1.12 | 1.10 | |
| Incremental Delay, d2 | 7.8 | 0.7 | | 0.7 | 0.8 | | 0.1 | 0.4 | | 1.6 | 0.1 | |
| Delay (s) | 36.9 | 6.9 | | 14.0 | 15.7 | | 6.2 | 7.5 | | 15.4 | 12.8 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.3 | | | 15.6 | | | 7.4 | | | 14.0 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 44.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 249 | 348 | 240 | 212 | 42 | 109 | 308 | 56 | 24 | 186 | 24 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.98 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2774 | | 1520 | 2964 | | | 3163 | | | 3190 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.81 | | | 0.89 | |
| Satd. Flow (perm) | 925 | 2774 | | 1520 | 2964 | | | 2584 | | | 2839 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 277 | 387 | 267 | 236 | 47 | 121 | 342 | 62 | 27 | 207 | 27 |
| RTOR Reduction (vph) | 0 | 268 | 0 | 0 | 25 | 0 | 0 | 16 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 41 | 396 | 0 | 267 | 258 | 0 | 0 | 509 | 0 | 0 | 247 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 285 | 854 | | 140 | 1322 | | | 994 | | | 1092 | |
| v/s Ratio Prot | c0.14 | | | c0.18 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.20 | | | 0.09 | | |
| v/c Ratio | 0.14 | 0.46 | | 1.91 | 0.19 | | | 0.51 | | | 0.23 | |
| Uniform Delay, d1 | 16.3 | 18.2 | | 29.5 | 10.9 | | | 15.3 | | | 13.5 | |
| Progression Factor | 0.63 | 0.27 | | 1.32 | 1.10 | | | 1.08 | | | 0.57 | |
| Incremental Delay, d2 | 1.0 | 1.7 | | 426.9 | 0.2 | | | 1.4 | | | 0.5 | |
| Delay (s) | 11.3 | 6.6 | | 465.9 | 12.3 | | | 18.0 | | | 8.1 | |
| Level of Service | B | A | | F | B | | | B | | | A | |
| Approach Delay (s) | 6.9 | | | 232.5 | | | 18.0 | | | 8.1 | | |
| Approach LOS | A | | | F | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 70.7 | HCM Level of Service | | | E | | | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 67.6% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

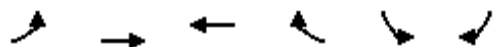
1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 294 | 14 | 69 | 461 | 69 | 34 | 93 | 160 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1586 | | | 1566 | | | 3165 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1453 | | | 3165 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 327 | 16 | 77 | 512 | 77 | 38 | 103 | 178 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 359 | 0 | 0 | 660 | 0 | 0 | 182 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 937 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.23 | | | 0.45 | | | 0.06 | | | | |
| v/c Ratio | | 0.36 | | | 0.70 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.5 | | | 20.3 | | | | |
| Progression Factor | | 1.89 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 4.4 | | | 0.8 | | | | |
| Delay (s) | | 11.0 | | | 11.9 | | | 21.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 11.0 | | | 11.9 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 93 | 361 | 472 | 44 | 64 | 124 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 98 | 380 | 497 | 46 | 67 | 131 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.85 | | | | 0.85 | 0.85 |
| vC, conflicting volume | 564 | | | | 1122 | 544 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 399 | | | | 1055 | 375 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 64 | 77 |
| cM capacity (veh/h) | 928 | | | | 186 | 560 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 478 | 543 | 67 | 131 | | |
| Volume Left | 98 | 0 | 67 | 0 | | |
| Volume Right | 0 | 46 | 0 | 131 | | |
| cSH | 928 | 1700 | 186 | 560 | | |
| Volume to Capacity | 0.11 | 0.32 | 0.36 | 0.23 | | |
| Queue Length 95th (ft) | 9 | 0 | 39 | 22 | | |
| Control Delay (s) | 2.9 | 0.0 | 34.9 | 13.4 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.9 | 0.0 | 20.7 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.5 | | | |
| Intersection Capacity Utilization | | | 69.3% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013





















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 468 | 1 | 26 | 674 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1663 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 520 | 1 | 29 | 749 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 521 | 0 | 0 | 778 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 607 | | |
| v/s Ratio Prot | c0.30 | | | | | |
| v/s Ratio Perm | | | | c0.47 | | |
| v/c Ratio | 0.44 | | | 1.28 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.06 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 139.1 | | |
| Delay (s) | 0.4 | | | 166.1 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.4 | | | 166.1 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 99.6 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 0.87 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 63.0% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | | |  | | | | | |   |  |
| Volume (veh/h) | 0 | 185 | 193 | 25 | 559 | 0 | 0 | 0 | 0 | 3 | 0 | 258 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 206 | 214 | 28 | 621 | 0 | 0 | 0 | 0 | 3 | 0 | 287 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 621 | | | 206 | | | 989 | 989 | 210 | 779 | 882 | 621 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 621 | | | 206 | | | 989 | 989 | 210 | 779 | 882 | 621 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 33 |
| cM capacity (veh/h) | 969 | | | 984 | | | 65 | 242 | 802 | 283 | 279 | 425 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 137 | 283 | 649 | 3 | 287 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 214 | 0 | 0 | 287 | | | | | | | |
| cSH | 1700 | 1700 | 984 | 283 | 425 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.67 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 121 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.9 | 29.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 29.1 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.8% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 188 | 0 | 584 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 209 | 0 | 649 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 649 | | | |
| Volume Left (vph) | 104 | 104 | 649 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.88 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 31.8 | | | |
| Approach Delay (s) | 10.3 | | 31.8 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 26.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.5% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 467 | 207 | 156 | 466 | 0 | 0 | 0 | 0 | 131 | 115 | 294 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 492 | 218 | 164 | 491 | 0 | 0 | 0 | 0 | 138 | 121 | 309 |
| RTOR Reduction (vph) | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | 92 |
| Lane Group Flow (vph) | 0 | 492 | 71 | 0 | 655 | 0 | 0 | 0 | 0 | 76 | 239 | 62 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.1 | 39.1 | | 73.1 | | | | | 19.7 | 19.7 | 64.8 |
| Effective Green, g (s) | | 39.1 | 39.1 | | 73.1 | | | | | 19.7 | 19.7 | 64.8 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.46 | | | | | 0.12 | 0.12 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 728 | 294 | | 1541 | | | | | 166 | 455 | 454 |
| v/s Ratio Prot | | c0.17 | | | c0.19 | | | | | 0.06 | c0.06 | |
| v/s Ratio Perm | | | 0.06 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.68 | 0.24 | | 0.43 | | | | | 0.46 | 0.53 | 0.14 |
| Uniform Delay, d1 | | 54.7 | 48.5 | | 29.3 | | | | | 65.2 | 65.8 | 30.0 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.0 | 1.9 | | 0.1 | | | | | 2.0 | 1.1 | 0.1 |
| Delay (s) | | 59.7 | 50.5 | | 0.7 | | | | | 67.2 | 66.9 | 30.1 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 56.9 | | | 0.7 | | | 0.0 | | | 56.9 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 30.1 | | |
| Intersection Capacity Utilization | | | 52.8% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 210 | 388 | 0 | 0 | 394 | 93 | 228 | 144 | 138 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3002 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3002 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 233 | 431 | 0 | 0 | 438 | 103 | 253 | 160 | 153 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 62 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 233 | 431 | 0 | 0 | 438 | 21 | 192 | 312 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 78.9 | 78.9 | | | 32.6 | 32.6 | 21.7 | 21.7 | | | | |
| Effective Green, g (s) | 78.9 | 78.9 | | | 32.6 | 32.6 | 21.7 | 21.7 | | | | |
| Actuated g/C Ratio | 0.49 | 0.49 | | | 0.20 | 0.20 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 776 | 1660 | | | 642 | 297 | 208 | 407 | | | | |
| v/s Ratio Prot | c0.15 | 0.13 | | | c0.14 | | c0.13 | 0.10 | | | | |
| v/s Ratio Perm | | | | | | 0.01 | | | | | | |
| v/c Ratio | 0.30 | 0.26 | | | 0.68 | 0.07 | 0.92 | 0.77 | | | | |
| Uniform Delay, d1 | 24.1 | 23.6 | | | 58.9 | 51.5 | 68.3 | 66.7 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 3.0 | 0.1 | 41.3 | 8.4 | | | | |
| Delay (s) | 1.9 | 1.8 | | | 61.9 | 51.6 | 109.6 | 75.1 | | | | |
| Level of Service | A | A | | | E | D | F | E | | | | |
| Approach Delay (s) | | 1.8 | | | 59.9 | | 86.8 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 46.7 | | | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | 0.50 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 28.8 | | | |
| Intersection Capacity Utilization | 49.4% | | | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 214 | 317 | 73 | 44 | 153 | 54 | 86 | 803 | 94 | 90 | 426 | 99 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1328 | 1595 | 1713 | | 1524 | 2965 | | 1509 | 2869 | |
| Flt Permitted | 0.49 | 1.00 | 1.00 | 0.43 | 1.00 | | 0.35 | 1.00 | | 0.14 | 1.00 | |
| Satd. Flow (perm) | 794 | 1556 | 1328 | 724 | 1713 | | 569 | 2965 | | 230 | 2869 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 225 | 334 | 77 | 46 | 161 | 57 | 91 | 845 | 99 | 95 | 448 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 14 | 0 | 0 | 10 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 225 | 334 | 27 | 46 | 204 | 0 | 91 | 934 | 0 | 95 | 530 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 369 | 557 | 461 | 275 | 539 | | 286 | 1125 | | 160 | 1088 | |
| v/s Ratio Prot | c0.04 | c0.21 | | 0.01 | 0.12 | | 0.02 | c0.32 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.20 | | 0.02 | 0.05 | | | 0.12 | | | 0.22 | | |
| v/c Ratio | 0.61 | 0.60 | 0.06 | 0.17 | 0.38 | | 0.32 | 0.83 | | 0.59 | 0.49 | |
| Uniform Delay, d1 | 21.0 | 23.6 | 19.6 | 20.5 | 24.0 | | 16.5 | 25.3 | | 18.3 | 21.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.9 | 4.7 | 0.2 | 0.3 | 2.0 | | 0.6 | 7.2 | | 5.8 | 1.6 | |
| Delay (s) | 23.9 | 28.3 | 19.8 | 20.8 | 26.0 | | 17.1 | 32.4 | | 24.1 | 22.8 | |
| Level of Service | C | C | B | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 25.7 | | | 25.1 | | | 31.1 | | | 23.0 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 43 | 383 | 16 | 18 | 212 | 32 | 35 | 79 | 67 | 62 | 42 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.95 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1909 | 1482 | | 1599 | 1198 | | 1840 | | | 1812 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.96 | 1.00 | | 0.94 | | | 0.83 | |
| Satd. Flow (perm) | | 1832 | 1482 | | 1544 | 1198 | | 1741 | | | 1544 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 45 | 403 | 17 | 19 | 223 | 34 | 37 | 83 | 71 | 65 | 44 | 40 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 17 | 0 | 33 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 0 | 448 | 8 | 0 | 242 | 17 | 0 | 158 | 0 | 0 | 129 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 902 | 730 | | 760 | 590 | | 723 | | | 641 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.24 | 0.01 | | 0.16 | 0.01 | | c0.09 | | | 0.08 | |
| v/c Ratio | | 0.50 | 0.01 | | 0.32 | 0.03 | | 0.22 | | | 0.20 | |
| Uniform Delay, d1 | | 11.1 | 8.4 | | 9.9 | 8.5 | | 12.2 | | | 12.1 | |
| Progression Factor | | 1.00 | 1.00 | | 2.06 | 3.36 | | 1.00 | | | 1.42 | |
| Incremental Delay, d2 | | 2.0 | 0.0 | | 1.0 | 0.1 | | 0.7 | | | 0.7 | |
| Delay (s) | | 13.0 | 8.5 | | 21.5 | 28.6 | | 12.9 | | | 17.9 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 12.9 | | | 22.4 | | | 12.9 | | | 17.9 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 64.0% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 71 | 419 | 23 | 19 | 189 | 8 | 39 | 216 | 72 | 18 | 51 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1658 | 1392 | | 1584 | 1497 | | 1754 | 1390 | | 1656 | |
| Flt Permitted | | 0.92 | 1.00 | | 0.85 | 1.00 | | 0.95 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1531 | 1392 | | 1352 | 1497 | | 1679 | 1390 | | 1560 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 441 | 24 | 20 | 199 | 8 | 41 | 227 | 76 | 19 | 54 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 39 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 516 | 14 | 0 | 219 | 3 | 0 | 268 | 37 | 0 | 88 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 542 | 493 | | 478 | 530 | | 827 | 684 | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.01 | | 0.16 | 0.00 | | c0.16 | 0.03 | | 0.06 | |
| v/c Ratio | | 0.95 | 0.03 | | 0.46 | 0.01 | | 0.32 | 0.05 | | 0.11 | |
| Uniform Delay, d1 | | 20.5 | 13.7 | | 16.2 | 13.6 | | 10.0 | 8.6 | | 8.9 | |
| Progression Factor | | 1.61 | 2.00 | | 0.94 | 0.90 | | 0.33 | 0.34 | | 1.15 | |
| Incremental Delay, d2 | | 26.9 | 0.1 | | 3.1 | 0.0 | | 0.8 | 0.1 | | 0.3 | |
| Delay (s) | | 60.0 | 27.5 | | 18.2 | 12.3 | | 4.1 | 3.0 | | 10.5 | |
| Level of Service | | E | C | | B | B | | A | A | | B | |
| Approach Delay (s) | | 58.5 | | | 18.0 | | | 3.9 | | | 10.5 | |
| Approach LOS | | E | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | | HCM Level of Service | | | | C | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 75.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 439 | 20 | 30 | 9 | 18 | 15 | 26 | 352 | 19 | 8 | 222 | 165 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.98 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1754 | 1390 | | 1758 | | | 1979 | | | 1873 | 1328 |
| Flt Permitted | | 0.73 | 1.00 | | 0.91 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1337 | 1390 | | 1609 | | | 1933 | | | 1852 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 488 | 22 | 33 | 10 | 20 | 17 | 29 | 391 | 21 | 9 | 247 | 183 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 13 | 0 | 0 | 3 | 0 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 0 | 510 | 18 | 0 | 34 | 0 | 0 | 438 | 0 | 0 | 256 | 90 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 607 | 577 | | 421 | | | 952 | | | 912 | 654 |
| v/s Ratio Prot | | c0.10 | | | | | | | | | | |
| v/s Ratio Perm | | 0.25 | 0.01 | | 0.02 | | | c0.23 | | | 0.14 | 0.07 |
| v/c Ratio | | 0.84 | 0.03 | | 0.08 | | | 0.46 | | | 0.28 | 0.14 |
| Uniform Delay, d1 | | 17.1 | 11.3 | | 18.1 | | | 10.8 | | | 9.7 | 9.0 |
| Progression Factor | | 1.03 | 1.64 | | 1.00 | | | 0.58 | | | 0.84 | 1.15 |
| Incremental Delay, d2 | | 8.2 | 0.1 | | 0.4 | | | 1.5 | | | 0.3 | 0.2 |
| Delay (s) | | 25.7 | 18.5 | | 18.5 | | | 7.8 | | | 8.4 | 10.5 |
| Level of Service | | C | B | | B | | | A | | | A | B |
| Approach Delay (s) | | 25.2 | | | 18.5 | | | 7.8 | | | 9.3 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 79.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↔ | ↑↑ | | | | | ↔ | ↑↑ | ↔ |
| Volume (vph) | 0 | 883 | 220 | 263 | 1103 | 0 | 0 | 0 | 0 | 274 | 200 | 374 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4313 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4313 | | 277 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 929 | 232 | 277 | 1161 | 0 | 0 | 0 | 0 | 288 | 211 | 394 |
| RTOR Reduction (vph) | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 65 |
| Lane Group Flow (vph) | 0 | 1126 | 0 | 277 | 1161 | 0 | 0 | 0 | 0 | 233 | 386 | 144 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 49.9 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Effective Green, g (s) | | 49.9 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Actuated g/C Ratio | | 0.48 | | 0.66 | 0.66 | | | | | 0.22 | 0.22 | 0.22 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2050 | | 371 | 2132 | | | | | 319 | 609 | 305 |
| v/s Ratio Prot | | 0.26 | | c0.11 | 0.36 | | | | | | | |
| v/s Ratio Perm | | | | c0.39 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.55 | | 0.75 | 0.54 | | | | | 0.73 | 0.63 | 0.47 |
| Uniform Delay, d1 | | 19.6 | | 11.3 | 9.4 | | | | | 37.7 | 36.8 | 35.3 |
| Progression Factor | | 1.00 | | 1.18 | 1.62 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.1 | | 5.0 | 0.6 | | | | | 8.6 | 2.3 | 1.4 |
| Delay (s) | | 20.6 | | 18.3 | 15.9 | | | | | 46.3 | 39.1 | 36.7 |
| Level of Service | | C | | B | B | | | | | D | D | D |
| Approach Delay (s) | | 20.6 | | | 16.3 | | | 0.0 | | | 40.4 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 100.0% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013























| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 309 | 848 | 0 | 0 | 844 | 234 | 521 | 346 | 402 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4408 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 579 | 3138 | | | 3119 | 1449 | | 4408 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 325 | 893 | 0 | 0 | 888 | 246 | 548 | 364 | 423 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 106 | 0 | 78 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 325 | 893 | 0 | 0 | 888 | 140 | 0 | 1257 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.5 | 62.5 | | | 45.1 | 45.1 | | 30.5 | | | | |
| Effective Green, g (s) | 62.5 | 62.5 | | | 45.1 | 45.1 | | 30.5 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 598 | 1868 | | | 1340 | 622 | | 1280 | | | | |
| v/s Ratio Prot | 0.06 | c0.28 | | | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.26 | | | | | 0.10 | | 0.29 | | | | |
| v/c Ratio | 0.54 | 0.48 | | | 0.66 | 0.22 | | 0.98 | | | | |
| Uniform Delay, d1 | 12.8 | 12.0 | | | 23.9 | 18.9 | | 37.0 | | | | |
| Progression Factor | 0.72 | 0.86 | | | 0.95 | 1.43 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.7 | | | 1.7 | 0.5 | | 21.0 | | | | |
| Delay (s) | 10.2 | 11.1 | | | 24.4 | 27.6 | | 57.9 | | | | |
| Level of Service | B | B | | | C | C | | E | | | | |
| Approach Delay (s) | | 10.8 | | | 25.1 | | | 57.9 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.3 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | 18.0 | | | |
| Intersection Capacity Utilization | | | 100.0% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 103 | 571 | 221 | 76 | 769 | 43 | 226 | 178 | 40 | 49 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1602 | 3232 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 234 | 3061 | 1291 | 716 | 3232 | | 807 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 108 | 601 | 233 | 80 | 809 | 45 | 238 | 187 | 42 | 52 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 95 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 108 | 601 | 138 | 80 | 850 | 0 | 238 | 208 | 0 | 52 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.5 | 52.6 | 62.1 | 40.1 | 33.7 | | 29.9 | 20.4 | | 24.1 | 17.5 | |
| Effective Green, g (s) | 62.5 | 52.6 | 62.1 | 40.1 | 33.7 | | 29.9 | 20.4 | | 24.1 | 17.5 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.38 | 0.32 | | 0.28 | 0.19 | | 0.23 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 460 | 1533 | 764 | 327 | 1037 | | 288 | 584 | | 262 | 464 | |
| v/s Ratio Prot | c0.06 | c0.20 | 0.02 | 0.01 | c0.26 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.08 | | 0.09 | 0.08 | | | c0.16 | | | 0.03 | | |
| v/c Ratio | 0.23 | 0.39 | 0.18 | 0.24 | 0.82 | | 0.83 | 0.36 | | 0.20 | 0.29 | |
| Uniform Delay, d1 | 11.9 | 16.3 | 9.8 | 21.1 | 32.8 | | 33.7 | 36.6 | | 32.3 | 38.3 | |
| Progression Factor | 0.89 | 0.99 | 1.92 | 1.00 | 1.00 | | 0.93 | 0.88 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.6 | 0.1 | 0.4 | 7.2 | | 16.8 | 1.3 | | 0.4 | 1.2 | |
| Delay (s) | 11.5 | 16.7 | 18.9 | 21.5 | 40.1 | | 48.2 | 33.5 | | 32.6 | 39.5 | |
| Level of Service | B | B | B | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 16.7 | | | 38.5 | | | 41.0 | | | 38.2 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 72.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 59 | 222 | 273 | 57 | 184 | 98 | 328 | 380 | 75 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1634 | 2873 | | 1463 | 3033 | | 1589 | 3244 | | 1549 | 3135 | |
| Flt Permitted | 0.55 | 1.00 | | 0.33 | 1.00 | | 0.46 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 942 | 2873 | | 515 | 3033 | | 772 | 3244 | | 780 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 234 | 287 | 60 | 194 | 103 | 345 | 400 | 79 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 206 | 0 | 0 | 64 | 0 | 0 | 15 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 62 | 315 | 0 | 60 | 233 | 0 | 345 | 464 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 366 | 785 | | 240 | 832 | | 530 | 1295 | | 340 | 935 | |
| v/s Ratio Prot | 0.01 | c0.11 | | c0.02 | 0.08 | | c0.11 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.07 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.17 | 0.40 | | 0.25 | 0.28 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 31.1 | | 24.0 | 30.0 | | 16.6 | 22.1 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.03 | 0.91 | |
| Incremental Delay, d2 | 0.3 | 1.5 | | 0.6 | 0.8 | | 3.0 | 0.8 | | 0.5 | 0.9 | |
| Delay (s) | 24.0 | 32.7 | | 24.7 | 30.8 | | 19.6 | 22.9 | | 23.5 | 26.9 | |
| Level of Service | C | C | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 31.8 | | | 29.8 | | | 21.5 | | | 26.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 165 | 536 | 79 | 6 | 437 | 123 | 65 | 577 | 7 | 140 | 309 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2912 | | | 2885 | | 1436 | 3185 | | 1450 | 2788 | |
| Flt Permitted | | 0.58 | | | 0.94 | | 0.43 | 1.00 | | 0.29 | 1.00 | |
| Satd. Flow (perm) | | 1692 | | | 2727 | | 654 | 3185 | | 448 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 183 | 596 | 88 | 7 | 486 | 137 | 72 | 641 | 8 | 156 | 343 | 111 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 39 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 854 | 0 | 0 | 591 | 0 | 72 | 648 | 0 | 156 | 406 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 778 | | | 797 | | 310 | 1078 | | 241 | 944 | |
| v/s Ratio Prot | | c0.07 | | | | | 0.01 | 0.20 | | c0.04 | 0.15 | |
| v/s Ratio Perm | | c0.39 | | | 0.22 | | 0.08 | | | c0.22 | | |
| v/c Ratio | | 1.10 | | | 0.74 | | 0.23 | 0.60 | | 0.65 | 0.43 | |
| Uniform Delay, d1 | | 19.0 | | | 20.8 | | 12.4 | 17.9 | | 14.3 | 16.6 | |
| Progression Factor | | 1.00 | | | 1.54 | | 0.89 | 0.70 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 62.1 | | | 0.6 | | 1.6 | 2.3 | | 12.7 | 1.4 | |
| Delay (s) | | 81.1 | | | 32.6 | | 12.6 | 14.7 | | 27.0 | 18.1 | |
| Level of Service | | F | | | C | | B | B | | C | B | |
| Approach Delay (s) | | 81.1 | | | 32.6 | | | 14.5 | | | 20.3 | |
| Approach LOS | | F | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.2 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.86 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 79.4% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 49 | 219 | 46 | 71 | 154 | 13 | 36 | 632 | 89 | 10 | 359 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1899 | | 1615 | 1942 | | 1658 | 3202 | | 1138 | 3197 | |
| Flt Permitted | 0.65 | 1.00 | | 0.53 | 1.00 | | 0.51 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 1137 | 1899 | | 908 | 1942 | | 889 | 3202 | | 379 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 51 | 226 | 47 | 73 | 159 | 13 | 37 | 652 | 92 | 10 | 370 | 44 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 4 | 0 | 0 | 17 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 51 | 262 | 0 | 73 | 168 | 0 | 37 | 727 | 0 | 10 | 400 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 420 | 701 | | 335 | 717 | | 424 | 1527 | | 181 | 1525 | |
| v/s Ratio Prot | c0.14 | | | 0.09 | | | c0.23 | | | 0.13 | | |
| v/s Ratio Perm | 0.04 | | | 0.08 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.12 | 0.37 | | 0.22 | 0.23 | | 0.09 | 0.48 | | 0.06 | 0.26 | |
| Uniform Delay, d1 | 13.5 | 15.0 | | 14.1 | 14.2 | | 9.3 | 11.5 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.73 | 1.78 | | 1.00 | 1.00 | | 0.50 | 0.50 | |
| Incremental Delay, d2 | 0.6 | 1.5 | | 0.6 | 0.3 | | 0.4 | 1.1 | | 0.5 | 0.3 | |
| Delay (s) | 14.1 | 16.5 | | 25.0 | 25.5 | | 9.7 | 12.6 | | 5.0 | 5.4 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 16.1 | | | 25.3 | | | 12.4 | | | 5.4 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.43 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 61.1% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|-------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 626 | 190 | 607 | 17 | 3 | 14 | 3 | 46 | 22 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.97 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | | 2955 | | | | 1732 | | | 1897 | | |
| Flt Permitted | 1.00 | | 0.57 | | | | 0.94 | | | 0.81 | | |
| Satd. Flow (perm) | 2956 | | 1703 | | | | 1646 | | | 1604 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 659 | 200 | 639 | 18 | 3 | 15 | 3 | 48 | 23 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 659 | 0 | 855 | 0 | 0 | 0 | 31 | 0 | 0 | 26 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | Perm | | | | Perm | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 823 | | | | 355 | | | 345 | | |
| v/s Ratio Prot | 0.22 | | c0.10 | | | | | | | | | |
| v/s Ratio Perm | | | c0.34 | | | | c0.02 | | | 0.02 | | |
| v/c Ratio | 0.80 | | 1.04 | | | | 0.09 | | | 0.07 | | |
| Uniform Delay, d1 | 21.9 | | 19.0 | | | | 20.4 | | | 20.3 | | |
| Progression Factor | 1.28 | | 0.77 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 2.0 | | 40.7 | | | | 0.5 | | | 0.4 | | |
| Delay (s) | 30.0 | | 55.3 | | | | 20.9 | | | 20.8 | | |
| Level of Service | C | | E | | | | C | | | C | | |
| Approach Delay (s) | 30.0 | | 55.3 | | | | 20.9 | | | 20.8 | | |
| Approach LOS | C | | E | | | | C | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 91.4 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 0.88 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 93.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

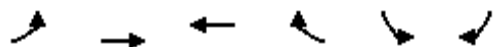


| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 333 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 351 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 352 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.25 | |
| v/s Ratio Perm | | |
| v/c Ratio | 1.60 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 0.89 | |
| Incremental Delay, d2 | 289.2 | |
| Delay (s) | 313.7 | |
| Level of Service | F | |
| Approach Delay (s) | 313.7 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 186 | 892 | 659 | 79 | 101 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3229 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.64 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2097 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 207 | 991 | 732 | 88 | 112 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1198 | 806 | 0 | 112 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1290 | 1972 | | 426 | 381 |
| v/s Ratio Prot | | | 0.25 | | c0.07 | |
| v/s Ratio Perm | | c0.57 | | | | 0.03 |
| v/c Ratio | | 0.93 | 0.41 | | 0.26 | 0.12 |
| Uniform Delay, d1 | | 11.2 | 6.4 | | 19.0 | 18.3 |
| Progression Factor | | 1.42 | 1.33 | | 0.93 | 0.90 |
| Incremental Delay, d2 | | 5.8 | 0.6 | | 1.5 | 0.6 |
| Delay (s) | | 21.8 | 9.1 | | 19.2 | 17.2 |
| Level of Service | | C | A | | B | B |
| Approach Delay (s) | | 21.8 | 9.1 | | 18.0 | |
| Approach LOS | | C | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 16.8 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.73 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 69.5% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 51 | 921 | 679 | 211 | 170 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2912 | | 1464 | 1373 |
| Flt Permitted | | 0.86 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2531 | 2912 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 54 | 969 | 715 | 222 | 179 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 1023 | 892 | 0 | 179 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1480 | 1702 | | 428 | 401 |
| v/s Ratio Prot | | | 0.31 | | c0.12 | |
| v/s Ratio Perm | | c0.40 | | | | 0.01 |
| v/c Ratio | | 0.69 | 0.52 | | 0.42 | 0.04 |
| Uniform Delay, d1 | | 9.4 | 8.1 | | 18.5 | 16.5 |
| Progression Factor | | 0.84 | 0.59 | | 1.00 | 1.44 |
| Incremental Delay, d2 | | 1.3 | 0.7 | | 2.9 | 0.2 |
| Delay (s) | | 9.2 | 5.5 | | 21.6 | 23.9 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 9.2 | 5.5 | | 22.1 | |
| Approach LOS | | A | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 9.0 | | HCM Level of Service | A |
| HCM Volume to Capacity ratio | | | 0.60 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 75.3% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave






















1/14/2013

| | → | ↘ | ↙ | ← | ↖ | ↗ |
|-----------------------------------|------|------|--------|------|----------------------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | ↘ | ↗ | ↘ | |
| Volume (vph) | 940 | 153 | 164 | 654 | 401 | 319 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.98 | | 1.00 | 1.00 | 0.94 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2240 | | 1770 | 2436 | 1761 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2240 | | 240 | 2436 | 1761 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 959 | 156 | 167 | 667 | 409 | 326 |
| RTOR Reduction (vph) | 9 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 1106 | 0 | 167 | 667 | 691 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1068 | | 114 | 1162 | 650 | |
| v/s Ratio Prot | 0.49 | | | 0.27 | c0.39 | |
| v/s Ratio Perm | | | c0.69 | | | |
| v/c Ratio | 1.04 | | 1.46 | 0.57 | 1.06 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 12.2 | 20.5 | |
| Progression Factor | 1.47 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 33.7 | | 250.7 | 2.1 | 53.2 | |
| Delay (s) | 58.7 | | 267.7 | 14.3 | 73.7 | |
| Level of Service | E | | F | B | E | |
| Approach Delay (s) | 58.7 | | | 65.1 | 73.7 | |
| Approach LOS | E | | | E | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 64.8 | | HCM Level of Service | E |
| HCM Volume to Capacity ratio | | | 1.29 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 115.1% | | ICU Level of Service | H |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  | |
| Volume (vph) | 1 | 695 | 85 | 251 | 1150 | 9 | 68 | 0 | 177 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.22 | 1.00 | 1.00 | 0.28 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.71 | |
| Satd. Flow (perm) | 430 | 3213 | 1422 | 472 | 3138 | 1366 | | 1309 | 1443 | | 722 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 772 | 94 | 279 | 1278 | 10 | 76 | 0 | 197 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 43 | 0 | 0 | 2 | 0 | 0 | 173 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 772 | 51 | 279 | 1278 | 8 | 0 | 76 | 24 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 45.7 | 45.7 | 45.7 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Effective Green, g (s) | 45.7 | 45.7 | 45.7 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.54 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 231 | 1727 | 765 | 605 | 2459 | 1070 | | 160 | 177 | | 88 | |
| v/s Ratio Prot | | 0.24 | | 0.10 | c0.41 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.26 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.45 | 0.07 | 0.46 | 0.52 | 0.01 | | 0.47 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.1 | 12.0 | 9.4 | 3.6 | 3.4 | 2.0 | | 34.8 | 33.3 | | 32.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.8 | 0.2 | 0.6 | 0.2 | 0.0 | | 2.2 | 0.4 | | 0.1 | |
| Delay (s) | 9.1 | 12.8 | 9.6 | 4.2 | 3.5 | 2.0 | | 37.0 | 33.6 | | 32.8 | |
| Level of Service | A | B | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 12.4 | | | 3.6 | | | 34.6 | | | 32.8 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.6 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 51.9% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 12 | 778 | 813 | 43 | 23 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1481 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2842 | 3017 | | 1481 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 864 | 903 | 48 | 26 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 877 | 947 | 0 | 27 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1042 | 2145 | | 115 | |
| v/s Ratio Prot | | | c0.31 | | c0.02 | |
| v/s Ratio Perm | | c0.31 | | | | |
| v/c Ratio | | 0.84 | 0.44 | | 0.23 | |
| Uniform Delay, d1 | | 26.1 | 5.5 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 8.2 | 0.3 | | 4.7 | |
| Delay (s) | | 34.3 | 0.3 | | 43.7 | |
| Level of Service | | C | A | | D | |
| Approach Delay (s) | | 34.3 | 0.3 | | 43.7 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 17.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.63 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 42.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|-------|------|------|------|------|-------|------|-------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 87 | 427 | 1 | 26 | 570 | 78 | 0 | 0 | 1 | 43 | 3 | 125 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (prot) | | 1727 | | | 3232 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.77 | | | 0.93 | | | 1.00 | | | 0.94 | 1.00 |
| Satd. Flow (perm) | | 1340 | | | 3026 | | | 1432 | | | 1581 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 97 | 474 | 1 | 29 | 633 | 87 | 0 | 0 | 1 | 48 | 3 | 139 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 0 | 572 | 0 | 0 | 737 | 0 | 0 | 0 | 0 | 0 | 51 | 46 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 489 | | | 1636 | | | 152 | | | 470 | 422 |
| v/s Ratio Prot | | | | | c0.07 | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | c0.43 | | | 0.16 | | | | | | 0.01 | c0.04 |
| v/c Ratio | | 1.17 | | | 0.45 | | | 0.00 | | | 0.11 | 0.11 |
| Uniform Delay, d1 | | 27.0 | | | 12.4 | | | 34.0 | | | 21.9 | 19.8 |
| Progression Factor | | 1.00 | | | 1.82 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 96.5 | | | 0.1 | | | 0.0 | | | 0.5 | 0.5 |
| Delay (s) | | 123.5 | | | 22.6 | | | 34.0 | | | 22.3 | 20.3 |
| Level of Service | | F | | | C | | | C | | | C | C |
| Approach Delay (s) | | 123.5 | | | 22.6 | | | 34.0 | | | 20.9 | |
| Approach LOS | | F | | | C | | | C | | | C | |

Intersection Summary



















| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 60.5 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.62 | | |
| Actuated Cycle Length (s) | 85.0 | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | 72.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 997 | 57 | 36 | 29 | 48 | 23 | 24 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.94 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1556 | 3022 | | 1587 | 3021 | | | 1808 | | | 1703 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 286 | 3022 | | 604 | 3021 | | | 1636 | | | 1627 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1049 | 60 | 38 | 31 | 51 | 24 | 25 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1103 | 0 | 0 | 87 | 0 | 0 | 119 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 150 | 1581 | | 316 | 1580 | | | 579 | | | 576 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | | 0.05 | | | c0.07 | |
| v/c Ratio | 0.27 | 0.41 | | 0.12 | 0.70 | | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | 8.6 | 9.4 | | 7.9 | 11.6 | | | 14.3 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.38 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.5 | 0.8 | | 0.7 | 2.3 | | | 0.5 | | | 0.8 | |
| Delay (s) | 13.1 | 10.2 | | 6.2 | 18.4 | | | 14.9 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.0 | | | 14.9 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 787 | 5 | 31 | 619 | 55 | 0 | 0 | 0 | 578 | 88 | 375 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.92 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 790 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 336 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 828 | 5 | 33 | 652 | 58 | 0 | 0 | 0 | 608 | 93 | 395 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 168 |
| Lane Group Flow (vph) | 26 | 833 | 0 | 33 | 652 | 33 | 0 | 0 | 0 | 608 | 93 | 227 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 160 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.20 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.15 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.36 | 0.11 | | | | 0.80 | 0.23 | 0.66 |
| Uniform Delay, d1 | 31.6 | 38.6 | | 15.2 | 15.7 | 13.3 | | | | 47.2 | 40.6 | 45.4 |
| Progression Factor | 0.85 | 0.86 | | 0.33 | 0.74 | 1.70 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.5 | | | | 8.8 | 1.4 | 9.8 |
| Delay (s) | 28.9 | 37.4 | | 5.1 | 12.0 | 23.1 | | | | 56.0 | 42.0 | 55.2 |
| Level of Service | C | D | | A | B | C | | | | E | D | E |
| Approach Delay (s) | | 37.2 | | | 12.6 | | 0.0 | | | | 54.5 | |
| Approach LOS | | D | | | B | | A | | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|--------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↰↱ | ↰↱ | | ↰ | ↰↱ | ↰ | | ↰↱ | ↰ | ↰ | | ↰ |
| Volume (vph) | 338 | 809 | 218 | 53 | 575 | 280 | 100 | 247 | 54 | 54 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 356 | 852 | 229 | 56 | 605 | 295 | 105 | 260 | 57 | 57 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 0 | 222 | 0 | 0 | 41 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 356 | 1063 | 0 | 56 | 605 | 73 | 0 | 365 | 16 | 57 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.32 | 0.50 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1036 | 1632 | | 105 | 772 | 251 | | 736 | 304 | 66 | | 57 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.34 | 0.65 | | 0.53 | 0.78 | 0.29 | | 0.50 | 0.05 | 0.86 | | 0.04 |
| Uniform Delay, d1 | 34.2 | 24.1 | | 59.2 | 45.8 | 39.8 | | 44.1 | 39.7 | 59.3 | | 55.6 |
| Progression Factor | 0.93 | 0.18 | | 1.00 | 1.00 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.6 | 1.3 | | 18.0 | 7.8 | 2.9 | | 2.4 | 0.3 | 65.1 | | 0.3 |
| Delay (s) | 32.5 | 5.7 | | 77.2 | 53.6 | 42.7 | | 44.2 | 40.1 | 124.4 | | 55.9 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 12.3 | | | 51.6 | | | 43.7 | | | 99.8 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.5 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue

1/14/2013




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|----------------------|--------|------|--------|------|------|------|
| Lane Configurations | | ↑↑ | | ↖ | ↑↑ | | ↖ | | ↖ | ↖ | ↑ | |
| Volume (vph) | 0 | 885 | 180 | 102 | 813 | 0 | 89 | 0 | 103 | 9 | 18 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.96 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2987 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1870 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2987 | | 296 | 3149 | | 1079 | | 1451 | 1803 | 1870 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 983 | 200 | 113 | 903 | 0 | 99 | 0 | 114 | 10 | 20 | 8 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1166 | 0 | 113 | 903 | 0 | 99 | 0 | 36 | 10 | 23 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1792 | | 178 | 1889 | | 345 | | 464 | 577 | 598 | |
| v/s Ratio Prot | | c0.39 | | | 0.29 | | | | | | 0.01 | |
| v/s Ratio Perm | | | | 0.38 | | | c0.09 | | 0.03 | 0.01 | | |
| v/c Ratio | | 0.65 | | 0.63 | 0.48 | | 0.29 | | 0.08 | 0.02 | 0.04 | |
| Uniform Delay, d1 | | 13.1 | | 12.9 | 11.2 | | 25.5 | | 23.7 | 23.2 | 23.4 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.8 | | 16.0 | 0.9 | | 2.1 | | 0.3 | 0.1 | 0.1 | |
| Delay (s) | | 15.0 | | 28.9 | 12.1 | | 27.5 | | 24.0 | 23.3 | 23.5 | |
| Level of Service | | B | | C | B | | C | | C | C | C | |
| Approach Delay (s) | | 15.0 | | | 14.0 | | | 25.7 | | | 23.5 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street


























1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|-------|-------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↱↱↱ | | | ↱↱↱ | |
| Volume (vph) | 0 | 0 | 0 | 290 | 0 | 1188 | 210 | 666 | 0 | 0 | 789 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 296 | 0 | 1212 | 214 | 680 | 0 | 0 | 805 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 296 | 0 | 1212 | 214 | 680 | 0 | 0 | 1305 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.19 | | c0.79 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.65 | | 2.77 | 0.46 | 0.25 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.3 | | 37.5 | 29.5 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.63 | 2.08 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.0 | | 804.4 | 2.7 | 0.2 | | | 34.8 | |
| Delay (s) | | | | 39.3 | | 841.9 | 21.4 | 18.0 | | | 71.8 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 684.4 | | | 18.8 | | | 71.8 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 308.2 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 98.9% | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |    |    |  |     | |
| Volume (vph) | 324 | 770 | 145 | 0 | 0 | 0 | 0 | 552 | 401 | 355 | 723 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 334 | 794 | 149 | 0 | 0 | 0 | 0 | 569 | 413 | 366 | 745 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 301 | 962 | 0 | 0 | 0 | 0 | 0 | 569 | 413 | 366 | 745 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.13 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.18 | | | |
| v/c Ratio | 0.62 | 0.94 | | | | | | 0.49 | 0.69 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 30.0 | 34.5 | | | | | | 32.5 | 34.6 | 33.8 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.21 | |
| Incremental Delay, d2 | 5.7 | 17.2 | | | | | | 1.3 | 5.8 | 4.7 | 0.1 | |
| Delay (s) | 35.7 | 51.7 | | | | | | 38.4 | 45.3 | 33.7 | 2.3 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 48.0 | | | 0.0 | | | 41.3 | | | 12.6 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 98.9% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 287 | 25 | 24 | 11 | 151 | 0 | 0 | 145 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.55 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 982 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 319 | 28 | 27 | 12 | 168 | 0 | 0 | 161 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 319 | 37 | 0 | 12 | 168 | 0 | 0 | 166 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 638 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.09 | | | c0.08 | |
| v/s Ratio Perm | | | | c0.19 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | 0.02 | 0.15 | | | 0.16 | |
| Uniform Delay, d1 | | | | 24.4 | 20.0 | | 10.5 | 7.9 | | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.05 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.8 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 29.2 | 20.1 | | 11.1 | 9.7 | | | 10.1 | |
| Level of Service | | | | C | C | | B | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 27.9 | | | 9.7 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 1.0 | | | |
| Intersection Capacity Utilization | | | 36.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 136 | 39 | 46 | 387 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1720 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1720 | | 1021 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 143 | 41 | 48 | 407 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 172 | 0 | 48 | 407 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | | | | pm+pt | | | | | |
| Protected Phases | 4 | | 8 | | | | 2 | | 1 6 | | | |
| Permitted Phases | 4 | | 8 | | | | | | 6 | | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | 50.0 | | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | 50.0 | | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | 0.59 | | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 809 | 647 | | 1094 | |
| v/s Ratio Prot | c0.01 | | | | | | 0.10 | | 0.01 | | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | 0.04 | | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.21 | 0.07 | | 0.37 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.2 | 8.5 | | 9.2 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 0.96 | | 0.86 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | 0.2 | | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 13.8 | 8.4 | | 8.8 | |
| Level of Service | C | C | | | B | | | B | A | | A | |
| Approach Delay (s) | 20.1 | | | | 20.0 | | 13.8 | | | | 8.8 | |
| Approach LOS | C | | | | B | | B | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 41.5% | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 46 | 41 | 16 | 183 | 273 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1751 | | 1765 | 1782 | 1656 | |
| Flt Permitted | 0.97 | | 0.52 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1751 | | 966 | 1782 | 1656 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 46 | 18 | 203 | 303 | 30 |
| RTOR Reduction (vph) | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 66 | 0 | 18 | 203 | 328 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 535 | 987 | 917 | |
| v/s Ratio Prot | c0.04 | | | 0.11 | c0.20 | |
| v/s Ratio Perm | | | 0.02 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.21 | 0.36 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.3 | 8.1 | |
| Progression Factor | 1.00 | | 0.54 | 0.64 | 1.41 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 0.9 | |
| Delay (s) | 15.9 | | 3.7 | 5.1 | 12.3 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 5.0 | 12.3 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.4 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.27 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 28.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 265 | 9 | 257 | 161 | 4 | 0 | 295 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 0.99 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3771 | | 1693 | 1677 | | | 1738 | 1428 |
| Flt Permitted | | | | | 0.99 | | 0.46 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3771 | | 820 | 1677 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 294 | 10 | 286 | 179 | 4 | 0 | 328 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 335 | 0 | 286 | 182 | 0 | 0 | 328 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1153 | | 595 | 1006 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.11 | | | 0.19 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.48 | 0.18 | | | 0.42 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 14.2 | 7.6 | | | 16.0 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.8 | 0.4 | | | 1.7 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.9 | 8.0 | | | 17.7 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.5 | | | 17.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.5 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.8% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 217 | 30 | 59 | 704 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3290 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3290 | | 1048 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 241 | 33 | 66 | 782 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 260 | 0 | 66 | 825 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1491 | | 634 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.2 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.3 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.3 | | 8.6 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.6 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 285 | 24 | 159 | 591 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3174 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 598 | 3174 | | 996 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 300 | 25 | 167 | 622 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 317 | 0 | 167 | 667 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 558 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.18 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.1 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.6 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 35 | 182 | 64 | 248 | 559 | 77 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 39 | 202 | 71 | 276 | 621 | 86 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 241 | 163 | 184 | 414 | 293 | |
| Volume Left (vph) | 39 | 71 | 0 | 0 | 0 | |
| Volume Right (vph) | 202 | 0 | 0 | 0 | 86 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.7 | 6.4 | 6.2 | 5.8 | 5.6 | |
| Degree Utilization, x | 0.38 | 0.29 | 0.32 | 0.67 | 0.45 | |
| Capacity (veh/h) | 596 | 538 | 557 | 609 | 630 | |
| Control Delay (s) | 12.1 | 10.8 | 10.9 | 18.4 | 11.9 | |
| Approach Delay (s) | 12.1 | 10.8 | | 15.7 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.7 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 52.0% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 373 | 18 | 20 | 389 | 69 | 77 | 55 | 68 | 351 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3250 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 936 | 1731 | 1421 | | | 257 | 3250 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 414 | 20 | 22 | 432 | 77 | 86 | 61 | 76 | 390 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 38 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 414 | 8 | 22 | 432 | 125 | 0 | 0 | 137 | 419 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 223 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.25 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.09 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.57 | 0.01 | 0.10 | 1.05 | 0.37 | | | 1.99 | 0.48 | |
| Uniform Delay, d1 | | 21.6 | 23.3 | 17.8 | 31.2 | 40.0 | 33.4 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.3 | 0.0 | 0.9 | 57.6 | 3.1 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.5 | 26.5 | 17.9 | 32.1 | 97.6 | 36.5 | | | 529.5 | 34.3 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.8 | | | 79.1 | | | | | 154.8 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 137.6 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 101.3% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 105 | 559 | 80 | 101 | 4 | 109 | 587 | 190 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 675 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 621 | 89 | 112 | 4 | 121 | 652 | 211 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 117 | 810 | 0 | 0 | 0 | 125 | 837 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 177 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.07 | | |
| v/s Ratio Perm | 0.17 | | | | | | c0.32 | |
| v/c Ratio | 0.66 | 0.95 | | | | 0.37 | 1.63 | |
| Uniform Delay, d1 | 34.6 | 38.1 | | | | 36.7 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 17.8 | 21.4 | | | | 3.2 | 291.8 | |
| Delay (s) | 52.4 | 59.5 | | | | 39.9 | 334.0 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 58.6 | | | | 296.8 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 64 | 583 | 0 | 0 | 458 | 55 | 83 | 51 | 19 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1952 | | | 1840 | | | | |
| Flt Permitted | | 0.91 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1533 | | | 1952 | | | 1840 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 648 | 0 | 0 | 509 | 61 | 92 | 57 | 21 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 719 | 0 | 0 | 570 | 0 | 0 | 170 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 943 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.76 | | | 0.47 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 9.1 | | | 6.8 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.8 | | | 1.3 | | | 2.0 | | | | |
| Delay (s) | | 14.9 | | | 8.1 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 14.9 | | | 8.1 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 84.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|------|----------------------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | ↘ | ↗ | ↗ | ↘ | ↗ | ↘ |
| Volume (vph) | 69 | 327 | 149 | 126 | 323 | 132 | 103 | 625 | 84 | 139 | 751 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1982 | 1434 | | 1944 | 1444 | 1546 | 3040 | 1296 | 1505 | 3069 | 1252 |
| Flt Permitted | | 0.39 | 1.00 | | 0.72 | 1.00 | 0.23 | 1.00 | 1.00 | 0.30 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 773 | 1434 | | 1416 | 1444 | 379 | 3040 | 1296 | 468 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 73 | 344 | 157 | 133 | 340 | 139 | 108 | 658 | 88 | 146 | 791 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 93 | 0 | 0 | 99 | 0 | 0 | 53 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 417 | 64 | 0 | 473 | 40 | 108 | 658 | 35 | 146 | 791 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 432 | 587 | | 405 | 413 | 275 | 1225 | 522 | 315 | 1248 | 509 |
| v/s Ratio Prot | | c0.09 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.30 | 0.04 | | c0.33 | 0.03 | 0.16 | | 0.03 | 0.19 | | 0.04 |
| v/c Ratio | | 0.97 | 0.11 | | 1.17 | 0.10 | 0.39 | 0.54 | 0.07 | 0.46 | 0.63 | 0.10 |
| Uniform Delay, d1 | | 30.3 | 19.2 | | 37.5 | 27.5 | 16.4 | 23.9 | 19.2 | 15.9 | 24.9 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.76 | 1.56 | 2.69 |
| Incremental Delay, d2 | | 35.4 | 0.4 | | 99.1 | 0.5 | 0.9 | 1.7 | 0.3 | 1.0 | 2.4 | 0.4 |
| Delay (s) | | 65.7 | 19.5 | | 136.6 | 28.0 | 17.3 | 25.6 | 19.5 | 29.1 | 41.1 | 52.2 |
| Level of Service | | E | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 53.1 | | | 112.0 | | | 23.9 | | | 40.5 | |
| Approach LOS | | D | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 52.5 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 88.8% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 83 | 400 | 83 | 101 | 473 | 90 | 49 | 59 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1644 | | | 1646 | | | 1796 | | | | |
| Flt Permitted | | 0.83 | | | 0.84 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1378 | | | 1397 | | | 1796 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 92 | 444 | 92 | 112 | 526 | 100 | 54 | 66 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 36 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 618 | 0 | 0 | 729 | 0 | 0 | 162 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 848 | | | 860 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.45 | | | 0.52 | | | 0.09 | | | | |
| v/c Ratio | | 0.73 | | | 0.85 | | | 0.34 | | | | |
| Uniform Delay, d1 | | 8.7 | | | 10.1 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.5 | | | 10.2 | | | 2.0 | | | | |
| Delay (s) | | 14.2 | | | 20.2 | | | 21.5 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 14.2 | | | 20.2 | | | 21.5 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 68.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↕ | |
| Volume (vph) | 21 | 442 | 71 | 82 | 552 | 44 | 37 | 76 | 74 | 55 | 235 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1686 | 1455 | | 1886 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.89 | 1.00 | | 0.84 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1630 | 1382 | | 1528 | 1417 | | 1435 | 1455 | | 1775 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 465 | 75 | 86 | 581 | 46 | 39 | 80 | 78 | 58 | 247 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 53 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 487 | 43 | 0 | 667 | 33 | 0 | 119 | 25 | 0 | 347 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 935 | 792 | | 876 | 812 | | 459 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.30 | 0.03 | | 0.44 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.52 | 0.05 | | 0.76 | 0.04 | | 0.26 | 0.05 | | 0.61 | |
| Uniform Delay, d1 | | 9.7 | 7.0 | | 12.1 | 7.0 | | 18.9 | 17.6 | | 21.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.1 | 0.1 | | 6.2 | 0.1 | | 1.4 | 0.2 | | 4.8 | |
| Delay (s) | | 11.8 | 7.2 | | 18.3 | 7.1 | | 20.3 | 17.9 | | 26.4 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 11.2 | | | 17.6 | | | 19.3 | | | 26.4 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.71 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 97.6% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 57 | 459 | 30 | 52 | 582 | 56 | 44 | 165 | 57 | 118 | 199 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1536 | 3068 | | 1652 | 3733 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.32 | 1.00 | | 0.41 | 1.00 | | 0.59 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 520 | 3068 | | 720 | 3733 | | 977 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 63 | 510 | 33 | 58 | 647 | 62 | 49 | 183 | 63 | 131 | 221 | 33 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 11 | 0 | 0 | 0 | 38 | 0 | 0 | 20 |
| Lane Group Flow (vph) | 63 | 536 | 0 | 58 | 698 | 0 | 49 | 183 | 25 | 131 | 221 | 13 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 248 | 1463 | | 343 | 1780 | | 391 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | 0.17 | | | c0.19 | | | 0.11 | | | c0.13 | |
| v/s Ratio Perm | 0.12 | | | 0.08 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.25 | 0.37 | | 0.17 | 0.39 | | 0.13 | 0.28 | 0.05 | 0.31 | 0.33 | 0.02 |
| Uniform Delay, d1 | 10.1 | 10.8 | | 9.7 | 10.9 | | 12.3 | 13.1 | 11.9 | 13.4 | 13.5 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.84 | 0.91 | 0.75 | 0.59 | 0.59 | 0.28 |
| Incremental Delay, d2 | 2.5 | 0.7 | | 1.1 | 0.7 | | 0.7 | 1.0 | 0.2 | 1.9 | 1.3 | 0.1 |
| Delay (s) | 12.6 | 11.5 | | 10.7 | 11.6 | | 11.0 | 13.0 | 9.1 | 9.8 | 9.2 | 3.4 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.6 | | | 11.5 | | | 11.8 | | | 8.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 73 | 389 | 71 | 70 | 369 | 74 | 55 | 196 | 64 | 133 | 267 | 160 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1327 | 3142 | | 1515 | 3107 | | 1582 | 2928 | | 1453 | 2920 | |
| Flt Permitted | 0.46 | 1.00 | | 0.44 | 1.00 | | 0.45 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 636 | 3142 | | 708 | 3107 | | 750 | 2928 | | 893 | 2920 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 77 | 409 | 75 | 74 | 388 | 78 | 58 | 206 | 67 | 140 | 281 | 168 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 99 | 0 |
| Lane Group Flow (vph) | 77 | 484 | 0 | 74 | 466 | 0 | 58 | 234 | 0 | 140 | 350 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 305 | 1508 | | 340 | 1491 | | 310 | 1210 | | 369 | 1207 | |
| v/s Ratio Prot | c0.15 | | | 0.15 | | | 0.08 | | | 0.12 | | |
| v/s Ratio Perm | 0.12 | | | 0.10 | | | 0.08 | | | c0.16 | | |
| v/c Ratio | 0.25 | 0.32 | | 0.22 | 0.31 | | 0.19 | 0.19 | | 0.38 | 0.29 | |
| Uniform Delay, d1 | 11.5 | 12.0 | | 11.3 | 11.9 | | 14.0 | 14.0 | | 15.3 | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.0 | 0.6 | | 1.5 | 0.5 | | 1.3 | 0.4 | | 3.0 | 0.6 | |
| Delay (s) | 13.5 | 12.5 | | 12.8 | 12.5 | | 15.3 | 14.4 | | 18.3 | 15.3 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.7 | | | 12.5 | | | 14.5 | | | 16.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.9 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 53.2% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 106 | 442 | 61 | 31 | 504 | 46 | 82 | 194 | 57 | 76 | 473 | 111 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1594 | 1653 | | 1370 | 1974 | | 1534 | 2998 | | 1534 | 3011 | |
| Flt Permitted | 0.26 | 1.00 | | 0.31 | 1.00 | | 0.28 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 439 | 1653 | | 446 | 1974 | | 450 | 2998 | | 951 | 3011 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 465 | 64 | 33 | 531 | 48 | 86 | 204 | 60 | 80 | 498 | 117 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 112 | 529 | 0 | 33 | 579 | 0 | 86 | 264 | 0 | 80 | 615 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 44.0 | 39.4 | | 40.8 | 37.8 | | 26.6 | 21.8 | | 26.6 | 21.8 | |
| Effective Green, g (s) | 44.0 | 37.4 | | 40.8 | 35.8 | | 26.6 | 19.8 | | 26.6 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 290 | 727 | | 247 | 831 | | 202 | 698 | | 331 | 701 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.29 | | c0.02 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.18 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.39 | 0.73 | | 0.13 | 0.70 | | 0.43 | 0.38 | | 0.24 | 0.88 | |
| Uniform Delay, d1 | 22.7 | 19.6 | | 20.1 | 20.2 | | 29.1 | 27.4 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 6.3 | | 0.2 | 4.8 | | 1.4 | 1.6 | | 0.4 | 14.5 | |
| Delay (s) | 23.6 | 25.9 | | 20.4 | 25.0 | | 30.5 | 29.0 | | 22.3 | 46.0 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 25.5 | | | 24.7 | | | 29.4 | | | 43.2 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 78.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 83 | 375 | 63 | 111 | 483 | 112 | 64 | 150 | 55 | 121 | 348 | 79 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3679 | | | 3131 | | 1652 | 3237 | | 1549 | 3025 | |
| Flt Permitted | | 0.70 | | | 0.74 | | 0.44 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | | 2597 | | | 2323 | | 765 | 3237 | | 994 | 3025 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 92 | 417 | 70 | 123 | 537 | 124 | 71 | 167 | 61 | 134 | 387 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 579 | 0 | 0 | 784 | 0 | 71 | 228 | 0 | 134 | 475 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1177 | | | 1053 | | 337 | 1424 | | 437 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.22 | | | c0.34 | | 0.09 | | | 0.13 | | |
| v/c Ratio | | 0.49 | | | 0.74 | | 0.21 | 0.16 | | 0.31 | 0.36 | |
| Uniform Delay, d1 | | 14.4 | | | 16.9 | | 13.0 | 12.7 | | 13.6 | 14.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 4.8 | | 1.4 | 0.2 | | 1.8 | 0.7 | |
| Delay (s) | | 15.9 | | | 21.7 | | 14.4 | 12.9 | | 15.4 | 14.7 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.9 | | | 21.7 | | | 13.2 | | | 14.9 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 93 | 831 | 6 | 19 | 554 | 236 | 1 | 1 | 9 | 202 | 1 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.40 | 1.00 | | 0.27 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 679 | 3206 | | 468 | 3320 | 1485 | | 1519 | | | 2535 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 103 | 923 | 7 | 21 | 616 | 262 | 1 | 1 | 10 | 224 | 1 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 7 | 0 | 0 | 53 | 0 |
| Lane Group Flow (vph) | 103 | 930 | 0 | 21 | 616 | 166 | 0 | 5 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 431 | 2033 | | 297 | 2105 | 942 | | 389 | | | 649 | |
| v/s Ratio Prot | c0.29 | | | 0.19 | | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.04 | | 0.11 | | 0.00 | | | c0.10 | |
| v/c Ratio | 0.24 | 0.46 | | 0.07 | 0.29 | 0.18 | | 0.01 | | | 0.39 | |
| Uniform Delay, d1 | 5.7 | 6.9 | | 5.1 | 6.0 | 5.5 | | 20.2 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.3 | 0.7 | | 0.5 | 0.4 | 0.4 | | 0.1 | | | 1.7 | |
| Delay (s) | 7.0 | 7.6 | | 5.6 | 6.3 | 5.9 | | 20.2 | | | 24.1 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 7.5 | | | 6.2 | | | | 20.2 | | | 24.1 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.3 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.44 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 72.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 124 | 216 | 119 | 94 | 162 | 57 | 144 | 876 | 87 | 128 | 816 | 99 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1584 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.24 | 1.00 | | 0.21 | 1.00 | 1.00 | 0.18 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1504 | | 393 | 1584 | | 323 | 3069 | 1337 | 285 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 131 | 227 | 125 | 99 | 171 | 60 | 152 | 922 | 92 | 135 | 859 | 104 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 131 | 329 | 0 | 99 | 216 | 0 | 152 | 922 | 52 | 135 | 859 | 55 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 285 | 389 | | 203 | 410 | | 235 | 1264 | 551 | 222 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.22 | | c0.03 | 0.14 | | c0.05 | c0.30 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.26 | | 0.04 | 0.24 | | 0.04 |
| v/c Ratio | 0.46 | 0.85 | | 0.49 | 0.53 | | 0.65 | 0.73 | 0.09 | 0.61 | 0.67 | 0.10 |
| Uniform Delay, d1 | 22.5 | 29.9 | | 22.7 | 27.0 | | 14.6 | 21.0 | 15.3 | 14.8 | 20.3 | 15.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.81 | 0.55 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.3 | 19.8 | | 8.2 | 4.8 | | 11.9 | 3.4 | 0.3 | 11.8 | 2.9 | 0.4 |
| Delay (s) | 27.8 | 49.6 | | 30.9 | 31.8 | | 21.8 | 20.5 | 8.8 | 26.6 | 23.2 | 15.7 |
| Level of Service | C | D | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 43.7 | | | 31.5 | | | 19.8 | | | 22.9 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.9 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 179 | 38 | 20 | 173 | 22 | 42 | 141 | 38 | 45 | 251 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1835 | | | 1848 | | | 1937 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1780 | | | 1790 | | | 1753 | | | 1871 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 185 | 39 | 21 | 178 | 23 | 43 | 145 | 39 | 46 | 259 | 51 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 11 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 236 | 0 | 0 | 216 | 0 | 0 | 216 | 0 | 0 | 347 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 739 | | | 744 | | | 809 | | | 864 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.12 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.27 | | | 0.40 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.7 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.73 | | | 1.29 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.8 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 10.2 | | | 14.6 | | | 13.0 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 10.2 | | | 14.6 | | | 13.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 49.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 190 | 39 | 25 | 180 | 20 | 53 | 199 | 31 | 46 | 206 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3056 | | 1576 | 3116 | | 1518 | 3119 | | 1550 | 3075 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 965 | 3056 | | 987 | 3116 | | 935 | 3119 | | 969 | 3075 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 211 | 43 | 28 | 200 | 22 | 59 | 221 | 34 | 51 | 229 | 42 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 27 | 228 | 0 | 28 | 209 | 0 | 59 | 241 | 0 | 51 | 254 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 893 | | 289 | 911 | | 547 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.07 | | | 0.07 | | | 0.08 | | | c0.08 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.11 | 0.13 | | 0.09 | 0.14 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.96 | | 0.77 | 0.77 | | 1.39 | 1.42 | | 0.41 | 0.36 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.3 | 17.5 | | 13.6 | 14.1 | | 8.7 | 8.8 | | 2.7 | 2.4 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.4 | | | 14.0 | | | 8.8 | | | 2.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 66 | 165 | 41 | 24 | 153 | 37 | 27 | 260 | 16 | 42 | 336 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2936 | | | 1923 | | | 1939 | |
| Flt Permitted | 0.62 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1014 | 3056 | | 977 | 2936 | | | 1824 | | | 1832 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 183 | 46 | 27 | 170 | 41 | 30 | 289 | 18 | 47 | 373 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 73 | 201 | 0 | 27 | 186 | 0 | 0 | 334 | 0 | 0 | 452 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 406 | 1222 | | 391 | 1174 | | | 870 | | | 874 | |
| v/s Ratio Prot | 0.07 | | | 0.06 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.18 | | | c0.25 | | |
| v/c Ratio | 0.18 | 0.16 | | 0.07 | 0.16 | | | 0.38 | | | 0.52 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.9 | | | 11.8 | |
| Progression Factor | 1.02 | 0.97 | | 0.77 | 0.76 | | | 1.07 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.2 | |
| Delay (s) | 13.9 | 12.4 | | 9.6 | 9.8 | | | 12.8 | | | 14.0 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 12.8 | | | 9.7 | | | 12.8 | | | 14.0 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.7 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.36 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 47 | 111 | 30 | 19 | 153 | 26 | 44 | 230 | 11 | 33 | 360 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1966 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.58 | 1.00 | | 0.65 | 1.00 | | | 0.89 | | | 0.96 | |
| Satd. Flow (perm) | 1013 | 1966 | | 1082 | 1975 | | | 1777 | | | 1911 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 33 | 21 | 170 | 29 | 49 | 256 | 12 | 37 | 400 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 156 | 0 | 21 | 199 | 0 | 0 | 317 | 0 | 0 | 500 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 312 | 605 | | 333 | 608 | | | 1012 | | | 1088 | |
| v/s Ratio Prot | 0.08 | | | c0.10 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.26 | | 0.06 | 0.33 | | | 0.31 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.3 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.83 | 0.81 | | 0.92 | 0.93 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 1.0 | | 0.4 | 1.4 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.7 | 14.6 | | 15.0 | 17.6 | | | 8.2 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 14.7 | | | 17.3 | | | 8.2 | | | 9.6 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 11.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 55.9% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 51 | 12 | 92 | 2 | 5 | 10 | 59 | 223 | 5 | 5 | 442 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1726 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1726 | | 1224 | 1808 | | 693 | 1647 | 1428 | 1049 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 13 | 102 | 2 | 6 | 11 | 66 | 248 | 6 | 6 | 491 | 80 |
| RTOR Reduction (vph) | 0 | 74 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 57 | 41 | 0 | 2 | 9 | 0 | 66 | 248 | 4 | 6 | 491 | 52 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 339 | 501 | | 416 | 988 | 857 | 629 | 1200 | 898 |
| v/s Ratio Prot | | 0.02 | | | 0.01 | | | 0.15 | | | c0.25 | |
| v/s Ratio Perm | c0.04 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.15 | 0.09 | | 0.01 | 0.02 | | 0.16 | 0.25 | 0.00 | 0.01 | 0.41 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.7 | 6.1 | 5.2 | 5.2 | 6.9 | 5.4 |
| Progression Factor | 1.40 | 2.81 | | 1.00 | 1.00 | | 0.80 | 0.75 | 0.93 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.0 | 0.1 | | 0.6 | 0.5 | 0.0 | 0.0 | 1.0 | 0.1 |
| Delay (s) | 25.8 | 49.2 | | 17.1 | 17.1 | | 5.2 | 5.1 | 4.9 | 5.3 | 7.9 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 41.5 | | | 17.1 | | | 5.1 | | | 7.6 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 51.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  | |
| Volume (vph) | 0 | 253 | 163 | 169 | 203 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 178 | 214 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 178 | 214 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | | | | D.P+P | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.10 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.31 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.4 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.20 | 2.14 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.3 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 30.7 | 23.8 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 27.0 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 60.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 299 | 113 | 73 | 511 | 219 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2848 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 642 | 3196 | | | 2848 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 315 | 119 | 77 | 538 | 231 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 163 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 395 | 0 | 77 | 538 | 68 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 705 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.04 | c0.30 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.54 | | 0.15 | 1.03 | 0.15 | | | |
| Uniform Delay, d1 | 10.2 | 8.0 | | | 32.9 | | 26.6 | 36.0 | 26.6 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 2.9 | | 0.6 | 46.3 | 0.7 | | | |
| Delay (s) | 4.9 | 3.6 | | | 35.8 | | 27.2 | 82.3 | 27.2 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 35.8 | | | 62.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.0 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 60.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 486 | 455 | 77 | 507 | 0 | 0 | 0 | 0 | 11 | 434 | 277 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3097 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.12 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3097 | | 209 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 506 | 474 | 80 | 528 | 0 | 0 | 0 | 0 | 11 | 452 | 289 |
| RTOR Reduction (vph) | 0 | 169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Lane Group Flow (vph) | 0 | 811 | 0 | 80 | 528 | 0 | 0 | 0 | 0 | 11 | 452 | 98 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 383 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.26 | | 0.04 | c0.16 | | | | | 0.01 | c0.14 | 0.06 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.73 | | 0.21 | 0.28 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 27.7 | | 13.9 | 10.5 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.2 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 31.9 | | 15.0 | 12.8 | | | | | 22.0 | 26.6 | 24.1 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 31.9 | | | 13.1 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

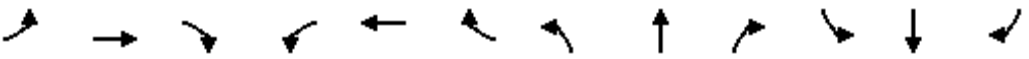
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 396 | 101 | 0 | 0 | 142 | 6 | 441 | 456 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.66 | 0.72 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1014 | 2316 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 408 | 104 | 0 | 0 | 146 | 6 | 455 | 470 | 57 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 36 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 204 | 308 | 0 | 0 | 149 | 0 | 455 | 470 | 21 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 681 | 1467 | | | 475 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.29 | 0.28 | 0.01 | | | |
| v/s Ratio Perm | 0.04 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.21 | | | 0.31 | | 0.79 | 0.77 | 0.04 | | | |
| Uniform Delay, d1 | 13.9 | 13.4 | | | 37.9 | | 28.1 | 27.7 | 20.1 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.7 | | 10.7 | 9.0 | 0.1 | | | |
| Delay (s) | 4.3 | 3.8 | | | 39.6 | | 38.7 | 36.7 | 20.2 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 4.0 | | | 39.6 | | | 36.7 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.8 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 217 | 102 | 117 | 255 | 121 | 80 | 663 | 75 | 102 | 875 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2939 | | | 2921 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.74 | | | 0.75 | | 0.16 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2205 | | | 2207 | | 261 | 3069 | 1309 | 433 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 226 | 106 | 122 | 266 | 126 | 83 | 691 | 78 | 106 | 911 | 67 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 48 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 373 | 0 | 0 | 477 | 0 | 83 | 691 | 30 | 106 | 911 | 34 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 986 | | | 727 | | 169 | 1210 | 508 | 234 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.23 | | 0.02 | c0.29 | |
| v/s Ratio Perm | | 0.13 | | | c0.22 | | 0.18 | | 0.02 | 0.17 | | 0.03 |
| v/c Ratio | | 0.38 | | | 0.66 | | 0.49 | 0.57 | 0.06 | 0.45 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.8 | | | 24.4 | | 16.6 | 20.1 | 16.3 | 15.8 | 22.1 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.27 | 0.69 | 0.53 | 1.11 | 1.17 | 1.77 |
| Incremental Delay, d2 | | 1.1 | | | 4.6 | | 9.1 | 1.8 | 0.2 | 4.6 | 3.1 | 0.2 |
| Delay (s) | | 17.9 | | | 29.0 | | 30.0 | 15.6 | 8.9 | 22.1 | 28.9 | 29.1 |
| Level of Service | | B | | | C | | C | B | A | C | C | C |
| Approach Delay (s) | | 17.9 | | | 29.0 | | | 16.4 | | | 28.3 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 72.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 318 | 0 | 0 | 375 | 100 | 52 | 43 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1698 | | | 1650 | | | | |
| Flt Permitted | | 0.84 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1465 | | | 1698 | | | 1650 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 353 | 0 | 0 | 417 | 111 | 58 | 48 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 437 | 0 | 0 | 513 | 0 | 0 | 125 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 856 | | | 993 | | | 482 | | | | |
| v/s Ratio Prot | | | | | c0.30 | | | | | | | |
| v/s Ratio Perm | | 0.30 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.51 | | | 0.52 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.0 | | | 8.0 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.98 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.2 | | | 1.5 | | | 1.3 | | | | |
| Delay (s) | | 10.2 | | | 9.4 | | | 18.9 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.2 | | | 9.4 | | | 18.9 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 67.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 19 | 306 | 27 | 51 | 402 | 68 | 27 | 112 | 40 | 56 | 148 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1957 | | | 1933 | | | 2960 | | | 2983 | |
| Flt Permitted | | 0.96 | | | 0.93 | | | 0.89 | | | 0.85 | |
| Satd. Flow (perm) | | 1889 | | | 1811 | | | 2661 | | | 2580 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 21 | 340 | 30 | 57 | 447 | 76 | 30 | 124 | 44 | 62 | 164 | 47 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 9 | 0 | 0 | 26 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 0 | 386 | 0 | 0 | 571 | 0 | 0 | 172 | 0 | 0 | 246 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 872 | | | 836 | | | 1105 | | | 1072 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | | | 0.32 | | | 0.06 | | | 0.10 | |
| v/c Ratio | | 0.44 | | | 0.68 | | | 0.16 | | | 0.23 | |
| Uniform Delay, d1 | | 11.8 | | | 13.8 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.57 | | | 0.36 | | | 1.29 | | | 0.46 | |
| Incremental Delay, d2 | | 1.4 | | | 3.7 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 8.2 | | | 8.7 | | | 15.6 | | | 6.2 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 8.2 | | | 8.7 | | | 15.6 | | | 6.2 | |
| Approach LOS | | A | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 9.1 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.47 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 82.3% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 279 | 39 | 82 | 532 | 96 | 43 | 217 | 98 | 82 | 215 | 59 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1511 | 3039 | | 1570 | 3078 | | 1587 | 2961 | | 1585 | 3074 | |
| Flt Permitted | 0.26 | 1.00 | | 0.52 | 1.00 | | 0.57 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 418 | 3039 | | 854 | 3078 | | 945 | 2961 | | 904 | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 310 | 43 | 91 | 591 | 107 | 48 | 241 | 109 | 91 | 239 | 66 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 22 | 0 | 0 | 50 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 46 | 336 | 0 | 91 | 676 | 0 | 48 | 300 | 0 | 91 | 275 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 141 | 1029 | | 289 | 1042 | | 509 | 1594 | | 487 | 1655 | |
| v/s Ratio Prot | | 0.11 | | | c0.22 | | | c0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.05 | | | 0.10 | | |
| v/c Ratio | 0.33 | 0.33 | | 0.31 | 0.65 | | 0.09 | 0.19 | | 0.19 | 0.17 | |
| Uniform Delay, d1 | 16.0 | 16.0 | | 15.9 | 18.2 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.79 | 0.75 | | 1.12 | 1.13 | | 1.12 | 1.26 | | 1.10 | 1.10 | |
| Incremental Delay, d2 | 5.7 | 0.8 | | 2.8 | 3.0 | | 0.4 | 0.3 | | 0.8 | 0.2 | |
| Delay (s) | 18.4 | 12.8 | | 20.7 | 23.6 | | 8.5 | 10.0 | | 9.3 | 8.6 | |
| Level of Service | B | B | | C | C | | A | A | | A | A | |
| Approach Delay (s) | | 13.4 | | | 23.3 | | | 9.8 | | | 8.8 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 15.7 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 53.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 96 | 103 | 382 | 48 | 164 | 245 | 130 | 46 | 295 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.98 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.96 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1507 | 2988 | | 1430 | 3719 | | | 3403 | | | 3530 | |
| Flt Permitted | 0.47 | 1.00 | | 0.51 | 1.00 | | | 0.69 | | | 0.85 | |
| Satd. Flow (perm) | 748 | 2988 | | 761 | 3719 | | | 2397 | | | 3030 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 58 | 302 | 101 | 108 | 402 | 51 | 173 | 258 | 137 | 48 | 311 | 67 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 15 | 0 | 0 | 47 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 58 | 353 | 0 | 108 | 438 | 0 | 0 | 521 | 0 | 0 | 403 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 357 | 1425 | | 363 | 1774 | | | 959 | | | 1212 | |
| v/s Ratio Prot | | 0.12 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | c0.14 | | | | c0.22 | | | 0.13 | |
| v/c Ratio | 0.16 | 0.25 | | 0.30 | 0.25 | | | 0.54 | | | 0.33 | |
| Uniform Delay, d1 | 9.6 | 10.1 | | 10.4 | 10.1 | | | 15.0 | | | 13.5 | |
| Progression Factor | 1.55 | 1.81 | | 1.10 | 1.09 | | | 1.07 | | | 0.76 | |
| Incremental Delay, d2 | 0.9 | 0.4 | | 1.9 | 0.3 | | | 1.3 | | | 0.7 | |
| Delay (s) | 15.9 | 18.6 | | 13.3 | 11.3 | | | 17.4 | | | 10.9 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | | 18.3 | | | 11.7 | | | 17.4 | | | 10.9 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 63.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 311 | 86 | 88 | 284 | 88 | 115 | 79 | 45 | 45 | 79 | 115 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1671 | 1436 | | 3088 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.78 | | | 0.68 | | | 0.91 | |
| Satd. Flow (perm) | | 1356 | 1436 | | 2443 | | | 1320 | | | 1679 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 346 | 96 | 98 | 316 | 98 | 128 | 88 | 50 | 50 | 88 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 442 | 50 | 0 | 480 | 0 | 0 | 253 | 0 | 0 | 215 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 709 | 751 | | 1278 | | | 426 | | | 542 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.03 | | 0.20 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.62 | 0.07 | | 0.38 | | | 0.59 | | | 0.40 | |
| Uniform Delay, d1 | | 11.0 | 7.7 | | 9.2 | | | 18.4 | | | 17.1 | |
| Progression Factor | | 1.41 | 3.20 | | 0.54 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 0.2 | | 0.8 | | | 6.0 | | | 2.2 | |
| Delay (s) | | 19.4 | 24.7 | | 5.8 | | | 24.4 | | | 19.2 | |
| Level of Service | | B | C | | A | | | C | | | B | |
| Approach Delay (s) | | 20.4 | | | 5.8 | | | 24.4 | | | 19.2 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 79.1% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 291 | 32 | 25 | 316 | 58 | 27 | 130 | 46 | 62 | 145 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | | 0.97 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3021 | | 1566 | 3020 | | | 3582 | | | 3594 | |
| Flt Permitted | 0.49 | 1.00 | | 0.54 | 1.00 | | | 0.89 | | | 0.84 | |
| Satd. Flow (perm) | 752 | 3021 | | 883 | 3020 | | | 3226 | | | 3068 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 323 | 36 | 28 | 351 | 64 | 30 | 144 | 51 | 69 | 161 | 72 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 66 | 346 | 0 | 28 | 392 | 0 | 0 | 195 | 0 | 0 | 260 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 347 | 1394 | | 408 | 1394 | | | 1340 | | | 1274 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.19 | 0.25 | | 0.07 | 0.28 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.6 | | 9.7 | 10.8 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.63 | 0.63 | | 0.83 | 0.66 | | | 0.95 | | | 0.41 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.2 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.5 | 7.0 | | 8.2 | 7.4 | | | 11.4 | | | 5.3 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.1 | | | 7.4 | | | 11.4 | | | 5.3 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.5 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 456 | 30 | 83 | 487 | 213 | 24 | 118 | 109 | 323 | 248 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3278 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.78 | | | 0.79 | | | 0.90 | | | 0.71 | |
| Satd. Flow (perm) | | 2560 | | | 2523 | | | 2807 | | | 2305 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 507 | 33 | 92 | 541 | 237 | 27 | 131 | 121 | 359 | 276 | 87 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 60 | 0 | 0 | 65 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 585 | 0 | 0 | 810 | 0 | 0 | 214 | 0 | 0 | 706 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 985 | | | 970 | | | 1339 | | | 603 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.32 | | | 0.05 | | | c0.31 | |
| v/c Ratio | | 0.59 | | | 0.84 | | | 0.16 | | | 1.28dl | |
| Uniform Delay, d1 | | 16.0 | | | 18.1 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.47 | | | 1.00 | | | 1.00 | | | 0.81 | |
| Incremental Delay, d2 | | 2.6 | | | 8.5 | | | 0.3 | | | 93.0 | |
| Delay (s) | | 26.1 | | | 26.6 | | | 10.4 | | | 112.4 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 26.1 | | | 26.6 | | | 10.4 | | | 112.4 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.85 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 84.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 875 | 135 | 46 | 762 | 0 | 79 | 0 | 35 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3037 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.81 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3037 | | | 2504 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 972 | 150 | 51 | 847 | 0 | 88 | 0 | 39 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1105 | 0 | 0 | 898 | 0 | 0 | 109 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1957 | | | 918 | | | 236 | | | | | |
| v/s Ratio Prot | c0.36 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.36 | | | c0.08 | | | | | |
| v/c Ratio | 0.56 | | | 0.98 | | | 0.46 | | | | | |
| Uniform Delay, d1 | 8.9 | | | 28.1 | | | 33.1 | | | | | |
| Progression Factor | 0.13 | | | 1.42 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 23.9 | | | 6.4 | | | | | |
| Delay (s) | 1.5 | | | 63.8 | | | 39.5 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.5 | | | 63.8 | | | 39.5 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 29.8 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.75 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.1% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 218 | 633 | 24 | 108 | 586 | 178 | 59 | 4 | 103 | 205 | 10 | 206 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1783 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.31 | 1.00 | | 0.34 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 502 | 3192 | | 593 | 3320 | 1485 | | 1591 | | 773 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 242 | 703 | 27 | 120 | 651 | 198 | 66 | 4 | 114 | 228 | 11 | 229 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 90 | 0 | 89 | 0 | 0 | 0 | 132 |
| Lane Group Flow (vph) | 242 | 728 | 0 | 120 | 651 | 108 | 0 | 95 | 0 | 228 | 11 | 97 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.2 | 43.0 | | 48.1 | 38.9 | 48.9 | | 11.8 | | 24.8 | 24.8 | 38.1 |
| Effective Green, g (s) | 55.2 | 43.0 | | 48.1 | 38.9 | 48.9 | | 11.8 | | 24.8 | 24.8 | 38.1 |
| Actuated g/C Ratio | 0.61 | 0.48 | | 0.53 | 0.43 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.42 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 463 | 1525 | | 426 | 1435 | 807 | | 209 | | 312 | 482 | 629 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.20 | 0.01 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.24 | | | 0.12 | | 0.06 | | 0.06 | | c0.12 | | 0.04 |
| v/c Ratio | 0.52 | 0.48 | | 0.28 | 0.45 | 0.13 | | 0.45 | | 0.73 | 0.02 | 0.15 |
| Uniform Delay, d1 | 8.9 | 15.9 | | 10.6 | 18.0 | 10.1 | | 36.1 | | 28.4 | 23.8 | 16.0 |
| Progression Factor | 2.60 | 1.89 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.2 | 0.9 | | 0.5 | 1.0 | 0.1 | | 2.1 | | 8.5 | 0.0 | 0.2 |
| Delay (s) | 24.2 | 30.9 | | 11.1 | 19.1 | 10.2 | | 38.2 | | 36.9 | 23.8 | 16.2 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 29.2 | | | 16.3 | | | 38.2 | | | 26.4 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.5 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 0.56 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 90.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 60.2% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps



1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 511 | 431 | 2 | 323 | 0 | 0 | 0 | 0 | 18 | 0 | 548 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 568 | 479 | 2 | 359 | 0 | 0 | 0 | 0 | 20 | 0 | 609 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 27 |
| cM capacity (veh/h) | 1189 | | | 994 | | | 79 | 263 | 710 | 353 | 263 | 829 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 284 | 284 | 479 | 122 | 239 | 20 | 609 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 20 | 0 | | | | | |
| Volume Right | 0 | 0 | 479 | 0 | 0 | 0 | 609 | | | | | |
| cSH | 1700 | 1700 | 1700 | 994 | 1700 | 353 | 829 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.28 | 0.00 | 0.14 | 0.06 | 0.73 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 4 | 167 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 15.8 | 20.3 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 20.2 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 52.0% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 529 | 0 | 325 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 588 | 0 | 361 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 294 | 294 | 361 | | | |
| Volume Left (vph) | 294 | 294 | 361 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.1 | 6.1 | 5.6 | | | |
| Degree Utilization, x | 0.50 | 0.50 | 0.56 | | | |
| Capacity (veh/h) | 571 | 573 | 620 | | | |
| Control Delay (s) | 13.9 | 13.9 | 15.3 | | | |
| Approach Delay (s) | 13.9 | | 15.3 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.5 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 483 | 64 | 208 | 525 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 574 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 537 | 71 | 231 | 583 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 596 | 0 | 231 | 583 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 452 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.18 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.23 | | | | | | | | |
| v/c Ratio | | 0.45 | | 0.51 | 0.32 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 16.5 | 9.3 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.37 | 0.17 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.2 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.5 | | 9.2 | 2.0 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.5 | | | 4.0 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 45.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 95 | 489 | 0 | 0 | 669 | 124 | 64 | 90 | 63 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3134 | | | 4497 | | | | |
| Flt Permitted | 0.20 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 351 | 3320 | | | 3134 | | | 4497 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 543 | 0 | 0 | 743 | 138 | 71 | 100 | 70 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 48 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 543 | 0 | 0 | 863 | 0 | 0 | 193 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 352 | 1875 | | | 1290 | | | 1428 | | | | |
| v/s Ratio Prot | 0.04 | c0.16 | | | c0.28 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.29 | | | 0.67 | | | 0.14 | | | | |
| Uniform Delay, d1 | 19.1 | 9.6 | | | 20.3 | | | 20.7 | | | | |
| Progression Factor | 0.44 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 2.0 | 0.4 | | | 2.8 | | | 0.2 | | | | |
| Delay (s) | 10.4 | 3.3 | | | 23.1 | | | 20.9 | | | | |
| Level of Service | B | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.5 | | | 23.1 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 358 | 114 | 119 | 426 | 89 | 129 | 78 | 37 | 31 | 85 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 3005 | | | 1835 | | | 1769 | |
| Flt Permitted | | 0.62 | | | 0.65 | | | 0.73 | | | 0.94 | |
| Satd. Flow (perm) | | 1874 | | | 1968 | | | 1369 | | | 1680 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 398 | 127 | 132 | 473 | 99 | 143 | 87 | 41 | 34 | 94 | 157 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 20 | 0 | 0 | 10 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 620 | 0 | 0 | 684 | 0 | 0 | 261 | 0 | 0 | 217 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 663 | | | 696 | | | 674 | | | 827 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.35 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.93 | | | 0.98 | | | 0.39 | | | 0.26 | |
| Uniform Delay, d1 | | 20.3 | | | 20.8 | | | 10.4 | | | 9.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 22.2 | | | 30.2 | | | 1.7 | | | 0.8 | |
| Delay (s) | | 42.4 | | | 51.0 | | | 12.0 | | | 10.4 | |
| Level of Service | | D | | | D | | | B | | | B | |
| Approach Delay (s) | | 42.4 | | | 51.0 | | | 12.0 | | | 10.4 | |
| Approach LOS | | D | | | D | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 83.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

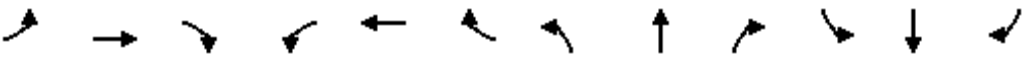
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 229 | 88 | 199 | 420 | 125 | 118 | 511 | 74 | 106 | 898 | 140 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1562 | 2993 | | 1574 | 3644 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.31 | 1.00 | | 0.50 | 1.00 | | 0.14 | 1.00 | 1.00 | 0.36 | 1.00 | 1.00 |
| Satd. Flow (perm) | 510 | 2993 | | 836 | 3644 | | 214 | 3069 | 1333 | 576 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 241 | 93 | 209 | 442 | 132 | 124 | 538 | 78 | 112 | 945 | 147 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 33 | 0 | 0 | 0 | 50 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 112 | 286 | 0 | 209 | 541 | 0 | 124 | 538 | 28 | 112 | 945 | 54 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 230 | 986 | | 330 | 1200 | | 182 | 1119 | 486 | 311 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.10 | | c0.03 | 0.15 | | c0.05 | 0.18 | | 0.03 | c0.30 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.24 | | 0.02 | 0.13 | | 0.04 |
| v/c Ratio | 0.49 | 0.29 | | 0.63 | 0.45 | | 0.68 | 0.48 | 0.06 | 0.36 | 0.84 | 0.11 |
| Uniform Delay, d1 | 19.9 | 21.1 | | 22.2 | 22.4 | | 17.6 | 20.8 | 17.5 | 15.5 | 24.7 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.41 | 1.06 | 2.39 |
| Incremental Delay, d2 | 7.2 | 0.7 | | 8.9 | 1.2 | | 18.7 | 1.5 | 0.2 | 2.4 | 5.6 | 0.3 |
| Delay (s) | 27.1 | 21.9 | | 31.2 | 23.7 | | 36.3 | 22.3 | 17.8 | 24.3 | 31.7 | 43.0 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 23.2 | | | 25.7 | | | 24.1 | | | 32.3 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.5 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|------|------|------|----------------------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ |
| Volume (vph) | 48 | 348 | 30 | 83 | 597 | 84 | 31 | 95 | 51 | 51 | 122 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1965 | 1466 | | 1990 | 1480 | | 2015 | 1506 | | 1995 | 1511 |
| Flt Permitted | | 0.61 | 1.00 | | 0.87 | 1.00 | | 0.91 | 1.00 | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1199 | 1466 | | 1749 | 1480 | | 1863 | 1506 | | 1809 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 366 | 32 | 87 | 628 | 88 | 33 | 100 | 54 | 54 | 128 | 66 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 47 | 0 | 0 | 32 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 0 | 417 | 15 | 0 | 715 | 41 | 0 | 133 | 22 | 0 | 182 | 27 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 553 | 677 | | 807 | 683 | | 774 | 626 | | 751 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.35 | 0.01 | | 0.41 | 0.03 | | 0.07 | 0.01 | | 0.10 | 0.02 |
| v/c Ratio | | 0.75 | 0.02 | | 0.89 | 0.06 | | 0.17 | 0.04 | | 0.24 | 0.04 |
| Uniform Delay, d1 | | 14.5 | 9.5 | | 15.9 | 9.7 | | 12.0 | 11.3 | | 12.4 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.45 | 0.05 | | 1.09 | 1.29 | | 1.03 | 0.89 |
| Incremental Delay, d2 | | 9.2 | 0.1 | | 11.8 | 0.1 | | 0.5 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | | 23.7 | 9.6 | | 18.9 | 0.6 | | 13.5 | 14.6 | | 13.5 | 10.2 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 22.7 | | | 16.9 | | | 13.8 | | | 12.6 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.4 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 100.1% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 385 | 20 | 51 | 564 | 91 | 10 | 107 | 23 | 119 | 203 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3076 | | 1550 | 3035 | | 1550 | 3016 | | 1550 | 2990 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.56 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3076 | | 802 | 3035 | | 912 | 3016 | | 1077 | 2990 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 428 | 22 | 57 | 627 | 101 | 11 | 119 | 26 | 132 | 226 | 69 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 15 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 83 | 444 | 0 | 57 | 708 | 0 | 11 | 130 | 0 | 132 | 255 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1514 | | 271 | 1027 | | 379 | 1253 | | 447 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.14 | | | c0.23 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.12 | | |
| v/c Ratio | 0.50 | 0.29 | | 0.21 | 0.69 | | 0.03 | 0.10 | | 0.30 | 0.21 | |
| Uniform Delay, d1 | 27.3 | 9.8 | | 15.3 | 18.6 | | 11.2 | 11.6 | | 12.7 | 12.1 | |
| Progression Factor | 1.16 | 0.56 | | 0.92 | 0.97 | | 0.85 | 0.86 | | 1.12 | 1.12 | |
| Incremental Delay, d2 | 8.6 | 0.4 | | 1.0 | 2.2 | | 0.1 | 0.2 | | 1.7 | 0.4 | |
| Delay (s) | 40.5 | 5.9 | | 15.2 | 20.2 | | 9.7 | 10.1 | | 15.9 | 13.9 | |
| Level of Service | D | A | | B | C | | A | B | | B | B | |
| Approach Delay (s) | | 11.3 | | | 19.8 | | | 10.1 | | | 14.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 48.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 63 | 263 | 165 | 241 | 320 | 61 | 412 | 300 | 189 | 55 | 295 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2920 | | 1550 | 3024 | | | 3144 | | | 3236 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.64 | | | 0.68 | |
| Satd. Flow (perm) | 823 | 2920 | | 1550 | 3024 | | | 2049 | | | 2229 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 292 | 183 | 268 | 356 | 68 | 458 | 333 | 210 | 61 | 328 | 56 |
| RTOR Reduction (vph) | 0 | 127 | 0 | 0 | 24 | 0 | 0 | 37 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 70 | 348 | 0 | 268 | 400 | 0 | 0 | 964 | 0 | 0 | 428 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 253 | 898 | | 143 | 1349 | | | 788 | | | 857 | |
| v/s Ratio Prot | c0.12 | | | c0.17 | | | 0.13 | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.47 | | | 0.19 | | |
| v/c Ratio | 0.28 | 0.39 | | 1.87 | 0.30 | | | 1.34dl | | | 0.50 | |
| Uniform Delay, d1 | 17.0 | 17.7 | | 29.5 | 11.5 | | | 20.0 | | | 15.2 | |
| Progression Factor | 0.81 | 0.68 | | 1.28 | 1.17 | | | 1.03 | | | 0.69 | |
| Incremental Delay, d2 | 2.6 | 1.2 | | 405.6 | 0.3 | | | 111.6 | | | 2.0 | |
| Delay (s) | 16.5 | 13.2 | | 443.3 | 13.7 | | | 132.3 | | | 12.6 | |
| Level of Service | B | B | | F | B | | | F | | | B | |
| Approach Delay (s) | 13.6 | | | 180.1 | | | 132.3 | | | 12.6 | | |
| Approach LOS | B | | | F | | | F | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 100.6 | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 80.4% | | ICU Level of Service | | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 73 | 629 | 73 | 54 | 108 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1532 | | | 1466 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 81 | 699 | 81 | 60 | 120 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 856 | 0 | 0 | 223 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 978 | | | 936 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.58 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.91 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.2 | | | 20.2 | | | | |
| Progression Factor | | 1.06 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.5 | | | 14.9 | | | 0.9 | | | | |
| Delay (s) | | 8.5 | | | 25.1 | | | 21.1 | | | | |
| Level of Service | | A | | | C | | | C | | | | |
| Approach Delay (s) | | 8.5 | | | 25.1 | | | 21.1 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 83.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

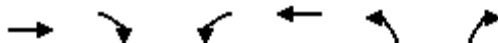


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 133 | 473 | 596 | 38 | 117 | 172 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 140 | 498 | 627 | 40 | 123 | 181 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.83 | | | | 0.83 | 0.83 |
| vC, conflicting volume | 684 | | | | 1448 | 669 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 522 | | | | 1438 | 504 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 83 | | | | 0 | 61 |
| cM capacity (veh/h) | 848 | | | | 101 | 469 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 638 | 667 | 123 | 181 | | |
| Volume Left | 140 | 0 | 123 | 0 | | |
| Volume Right | 0 | 40 | 0 | 181 | | |
| cSH | 848 | 1700 | 101 | 469 | | |
| Volume to Capacity | 0.17 | 0.39 | 1.22 | 0.39 | | |
| Queue Length 95th (ft) | 15 | 0 | 207 | 45 | | |
| Control Delay (s) | 4.0 | 0.0 | 236.8 | 17.4 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 4.0 | 0.0 | 106.2 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 21.7 | | | |
| Intersection Capacity Utilization | | | 87.5% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | |
| Volume (vph) | 704 | 0 | 1 | 607 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1746 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 782 | 0 | 1 | 674 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 782 | 0 | 0 | 675 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.45 | | | | c0.01 | |
| v/s Ratio Perm | | | | c0.39 | | |
| v/c Ratio | 0.64 | | | 1.06 | 0.03 | |
| Uniform Delay, d1 | 7.2 | | | 27.0 | 29.8 | |
| Progression Factor | 0.12 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | | | 52.5 | 0.2 | |
| Delay (s) | 1.1 | | | 79.5 | 30.1 | |
| Level of Service | A | | | E | C | |
| Approach Delay (s) | 1.1 | | | 79.5 | 30.1 | |
| Approach LOS | A | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 37.3 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.69 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 49.1% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 246 | 604 | 30 | 389 | 0 | 0 | 0 | 0 | 17 | 6 | 246 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 273 | 671 | 33 | 432 | 0 | 0 | 0 | 0 | 19 | 7 | 273 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 432 | | | 273 | | | 1111 | 1108 | 472 | 636 | 772 | 432 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 432 | | | 273 | | | 1111 | 1108 | 472 | 636 | 772 | 432 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 52 |
| cM capacity (veh/h) | 1138 | | | 1272 | | | 84 | 206 | 544 | 360 | 324 | 571 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 182 | 762 | 466 | 26 | 273 | | | | | | | |
| Volume Left | 0 | 0 | 33 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 671 | 0 | 0 | 273 | | | | | | | |
| cSH | 1700 | 1700 | 1272 | 349 | 571 | | | | | | | |
| Volume to Capacity | 0.11 | 0.45 | 0.03 | 0.07 | 0.48 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 64 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 16.1 | 16.9 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 16.9 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.7% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 263 | 0 | 420 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 292 | 0 | 467 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 146 | 146 | 467 | | | |
| Volume Left (vph) | 146 | 146 | 467 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.3 | 6.3 | 5.0 | | | |
| Degree Utilization, x | 0.26 | 0.26 | 0.65 | | | |
| Capacity (veh/h) | 542 | 543 | 699 | | | |
| Control Delay (s) | 10.3 | 10.3 | 16.6 | | | |
| Approach Delay (s) | 10.3 | | 16.6 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.2 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 39.1% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 493 | 337 | 263 | 637 | 0 | 0 | 0 | 0 | 281 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 519 | 355 | 277 | 671 | 0 | 0 | 0 | 0 | 296 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 228 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 519 | 127 | 0 | 948 | 0 | 0 | 0 | 0 | 163 | 559 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1458 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.16 | | | c0.28 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.10 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.67 | 0.42 | | 0.65 | | | | | 0.84 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 54.7 | 51.0 | | 36.5 | | | | | 66.7 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.04 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.6 | 4.3 | | 0.1 | | | | | 25.5 | 44.1 | 0.2 |
| Delay (s) | | 59.2 | 55.3 | | 1.5 | | | | | 92.1 | 112.6 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 57.6 | | | 1.5 | | | 0.0 | | | 92.2 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.9 | | |
| Intersection Capacity Utilization | | | 75.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   |  | | | |
| Volume (vph) | 290 | 485 | 0 | 0 | 587 | 142 | 313 | 204 | 187 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 322 | 539 | 0 | 0 | 652 | 158 | 348 | 227 | 208 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 84 | 0 | 61 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 322 | 539 | 0 | 0 | 652 | 74 | 264 | 458 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 842 | 1799 | | | 744 | 344 | 117 | 230 | | | | |
| v/s Ratio Prot | c0.20 | 0.16 | | | c0.20 | | c0.17 | 0.15 | | | | |
| v/s Ratio Perm | | | | | | 0.05 | | | | | | |
| v/c Ratio | 0.38 | 0.30 | | | 0.88 | 0.22 | 2.26 | 1.99 | | | | |
| Uniform Delay, d1 | 22.6 | 21.5 | | | 59.2 | 49.7 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.06 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 11.3 | 0.3 | 591.8 | 461.2 | | | | |
| Delay (s) | 1.5 | 1.3 | | | 70.5 | 50.0 | 665.8 | 535.2 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.4 | | | 66.5 | | 579.2 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 207.3 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | 29.0 | | | | |
| Intersection Capacity Utilization | | | 63.7% | | | ICU Level of Service | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 138 | 269 | 134 | 127 | 266 | 106 | 104 | 504 | 78 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1576 | 1600 | 1372 | 1594 | 1766 | | 1578 | 3009 | | 1537 | 3001 | |
| Flt Permitted | 0.28 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.14 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 470 | 1600 | 1372 | 708 | 1766 | | 229 | 3009 | | 516 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 145 | 283 | 141 | 134 | 280 | 112 | 109 | 531 | 82 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 98 | 0 | 16 | 0 | 0 | 14 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 145 | 283 | 43 | 134 | 376 | 0 | 109 | 599 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.1 | 27.1 | 27.1 | 34.1 | 27.1 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 32.1 | 28.1 | 27.1 | 32.1 | 27.1 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.36 | 0.32 | 0.31 | 0.36 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 245 | 507 | 419 | 316 | 540 | | 166 | 1157 | | 271 | 1154 | |
| v/s Ratio Prot | c0.04 | 0.18 | | 0.03 | c0.21 | | c0.03 | 0.20 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.17 | | 0.03 | 0.12 | | | 0.25 | | | 0.15 | | |
| v/c Ratio | 0.59 | 0.56 | 0.10 | 0.42 | 0.70 | | 0.66 | 0.52 | | 0.41 | 0.83 | |
| Uniform Delay, d1 | 20.9 | 25.1 | 22.1 | 20.1 | 27.2 | | 18.1 | 21.0 | | 16.3 | 24.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.8 | 4.4 | 0.5 | 0.9 | 7.3 | | 9.0 | 1.7 | | 1.0 | 7.0 | |
| Delay (s) | 24.7 | 29.5 | 22.6 | 21.0 | 34.4 | | 27.1 | 22.6 | | 17.3 | 31.7 | |
| Level of Service | C | C | C | C | C | | C | C | | B | C | |
| Approach Delay (s) | | 26.6 | | | 31.0 | | | 23.3 | | | 30.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 88.7 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 78.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 38 | 340 | 59 | 73 | 427 | 81 | 36 | 57 | 34 | 35 | 88 | 67 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1970 | 1467 | | 1624 | 1381 | | 1866 | | | 1876 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.90 | 1.00 | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1837 | 1467 | | 1469 | 1381 | | 1703 | | | 1783 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 358 | 62 | 77 | 449 | 85 | 38 | 60 | 36 | 37 | 93 | 71 |
| RTOR Reduction (vph) | 0 | 0 | 31 | 0 | 0 | 36 | 0 | 20 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 0 | 398 | 31 | 0 | 526 | 49 | 0 | 114 | 0 | 0 | 171 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 904 | 722 | | 723 | 680 | | 707 | | | 741 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | 0.02 | | 0.36 | 0.04 | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.44 | 0.04 | | 0.73 | 0.07 | | 0.16 | | | 0.23 | |
| Uniform Delay, d1 | | 10.7 | 8.6 | | 13.1 | 8.7 | | 11.9 | | | 12.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.92 | 3.36 | | 1.00 | | | 1.45 | |
| Incremental Delay, d2 | | 1.6 | 0.1 | | 2.7 | 0.1 | | 0.5 | | | 0.7 | |
| Delay (s) | | 12.3 | 8.7 | | 27.7 | 29.3 | | 12.4 | | | 18.5 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 11.8 | | | 27.9 | | | 12.4 | | | 18.5 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 72.6% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|------|----------------------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰↱ | |
| Volume (vph) | 58 | 254 | 40 | 71 | 464 | 20 | 34 | 108 | 33 | 16 | 175 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1753 | 1443 | | 1724 | 1487 | | 1713 | 1489 | | 1713 | |
| Flt Permitted | | 0.49 | 1.00 | | 0.86 | 1.00 | | 0.89 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 863 | 1443 | | 1486 | 1487 | | 1551 | 1489 | | 1687 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 61 | 267 | 42 | 75 | 488 | 21 | 36 | 114 | 35 | 17 | 184 | 69 |
| RTOR Reduction (vph) | 0 | 0 | 27 | 0 | 0 | 8 | 0 | 0 | 18 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 328 | 15 | 0 | 563 | 13 | 0 | 150 | 17 | 0 | 251 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 305 | 511 | | 526 | 526 | | 764 | 733 | | 831 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.38 | 0.01 | | 0.38 | 0.01 | | 0.10 | 0.01 | | c0.15 | |
| v/c Ratio | | 1.08 | 0.03 | | 1.07 | 0.02 | | 0.20 | 0.02 | | 0.30 | |
| Uniform Delay, d1 | | 21.0 | 13.7 | | 21.0 | 13.7 | | 9.3 | 8.5 | | 9.8 | |
| Progression Factor | | 1.74 | 3.12 | | 0.97 | 0.87 | | 0.17 | 0.23 | | 1.12 | |
| Incremental Delay, d2 | | 71.3 | 0.1 | | 55.1 | 0.1 | | 0.2 | 0.0 | | 0.9 | |
| Delay (s) | | 107.7 | 42.9 | | 75.5 | 12.0 | | 1.7 | 2.0 | | 11.9 | |
| Level of Service | | F | D | | E | B | | A | A | | B | |
| Approach Delay (s) | | 100.4 | | | 73.2 | | | 1.8 | | | 11.9 | |
| Approach LOS | | F | | | E | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.2 | | | | HCM Level of Service | | | | E | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 81.6% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 229 | 35 | 76 | 8 | 14 | 11 | 38 | 255 | 8 | 30 | 533 | 521 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1860 | 1440 | | 1765 | | | 1996 | | | 1975 | 1382 |
| Flt Permitted | | 0.76 | 1.00 | | 0.93 | | | 0.85 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1468 | 1440 | | 1657 | | | 1698 | | | 1928 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 254 | 39 | 84 | 9 | 16 | 12 | 42 | 283 | 9 | 33 | 592 | 579 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 205 |
| Lane Group Flow (vph) | 0 | 293 | 35 | 0 | 28 | 0 | 0 | 332 | 0 | 0 | 625 | 374 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 658 | 598 | | 433 | | | 836 | | | 949 | 680 |
| v/s Ratio Prot | | c0.05 | | | | | | | | | | |
| v/s Ratio Perm | | 0.13 | 0.02 | | 0.02 | | | 0.20 | | | c0.32 | 0.27 |
| v/c Ratio | | 0.45 | 0.06 | | 0.06 | | | 0.40 | | | 0.66 | 0.55 |
| Uniform Delay, d1 | | 13.6 | 11.4 | | 18.0 | | | 10.4 | | | 12.4 | 11.5 |
| Progression Factor | | 1.13 | 1.96 | | 1.00 | | | 0.51 | | | 0.74 | 0.83 |
| Incremental Delay, d2 | | 1.3 | 0.1 | | 0.3 | | | 1.0 | | | 2.8 | 2.5 |
| Delay (s) | | 16.8 | 22.4 | | 18.3 | | | 6.4 | | | 12.0 | 12.0 |
| Level of Service | | B | C | | B | | | A | | | B | B |
| Approach Delay (s) | | 18.0 | | | 18.3 | | | 6.4 | | | 12.0 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 77.7% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 894 | 289 | 366 | 1046 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4573 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4573 | | 193 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 941 | 304 | 385 | 1101 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 81 |
| Lane Group Flow (vph) | 0 | 1200 | 0 | 385 | 1101 | 0 | 0 | 0 | 0 | 308 | 603 | 190 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 44.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 44.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.38 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1750 | | 454 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.26 | | 0.19 | 0.33 | | | | | | | |
| v/s Ratio Perm | | | | 0.36 | | | | | | 0.21 | 0.21 | 0.13 |
| v/c Ratio | | 0.69 | | 0.85 | 0.51 | | | | | 0.85 | 0.85 | 0.54 |
| Uniform Delay, d1 | | 29.7 | | 28.5 | 10.5 | | | | | 41.4 | 41.4 | 37.8 |
| Progression Factor | | 1.00 | | 0.89 | 1.67 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.2 | | 9.6 | 0.6 | | | | | 16.7 | 9.4 | 1.9 |
| Delay (s) | | 31.9 | | 35.0 | 18.0 | | | | | 58.1 | 50.8 | 39.7 |
| Level of Service | | C | | D | B | | | | | E | D | D |
| Approach Delay (s) | | 31.9 | | | 22.4 | | | 0.0 | | | 50.2 | |
| Approach LOS | | C | | | C | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 103.6% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  | | | | |
| Volume (vph) | 341 | 1066 | 0 | 0 | 1005 | 269 | 406 | 333 | 302 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Flt Permitted | 0.14 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 479 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1122 | 0 | 0 | 1058 | 283 | 427 | 351 | 318 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 62 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1122 | 0 | 0 | 1058 | 192 | 0 | 1034 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 71.5 | 71.5 | | | 53.4 | 53.4 | | 31.5 | | | | |
| Effective Green, g (s) | 71.5 | 71.5 | | | 53.4 | 53.4 | | 31.5 | | | | |
| Actuated g/C Ratio | 0.62 | 0.62 | | | 0.46 | 0.46 | | 0.27 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 578 | 2085 | | | 1505 | 691 | | 1238 | | | | |
| v/s Ratio Prot | 0.07 | c0.33 | | | c0.33 | | | | | | | |
| v/s Ratio Perm | 0.32 | | | | | 0.13 | | 0.23 | | | | |
| v/c Ratio | 0.62 | 0.54 | | | 0.70 | 0.28 | | 0.83 | | | | |
| Uniform Delay, d1 | 14.8 | 12.4 | | | 24.5 | 18.9 | | 39.3 | | | | |
| Progression Factor | 1.25 | 0.17 | | | 0.99 | 1.28 | | 1.00 | | | | |
| Incremental Delay, d2 | 1.4 | 0.7 | | | 2.0 | 0.7 | | 5.6 | | | | |
| Delay (s) | 19.9 | 2.7 | | | 26.3 | 25.0 | | 44.9 | | | | |
| Level of Service | B | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 6.9 | | | 26.1 | | | 44.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.1 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 103.6% | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 132 | 657 | 399 | 102 | 765 | 66 | 227 | 179 | 66 | 77 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1601 | 3283 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.39 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 180 | 3273 | 1313 | 655 | 3283 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 139 | 692 | 420 | 107 | 805 | 69 | 239 | 188 | 69 | 81 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 169 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 139 | 692 | 251 | 107 | 868 | 0 | 239 | 219 | 0 | 81 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.4 | 68.8 | 43.4 | 34.4 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.4 | 68.8 | 43.4 | 34.4 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.46 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 427 | 1491 | 786 | 321 | 982 | | 348 | 694 | | 259 | 465 | |
| v/s Ratio Prot | c0.08 | c0.21 | 0.05 | 0.03 | c0.26 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.46 | 0.32 | 0.33 | 0.88 | | 0.69 | 0.32 | | 0.31 | 0.41 | |
| Uniform Delay, d1 | 15.7 | 21.6 | 11.5 | 23.9 | 38.4 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.80 | 0.80 | 2.43 | 1.00 | 1.00 | | 0.97 | 1.01 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.8 | 0.2 | 0.6 | 11.5 | | 5.3 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 14.2 | 18.2 | 28.0 | 24.5 | 49.9 | | 34.9 | 37.8 | | 36.9 | 45.7 | |
| Level of Service | B | B | C | C | D | | C | D | | D | D | |
| Approach Delay (s) | | 21.0 | | | 47.1 | | | 36.4 | | | 43.8 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 19.0 | | |
| Intersection Capacity Utilization | | | 75.0% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 221 | 367 | 82 | 313 | 107 | 362 | 340 | 81 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 2911 | | 1653 | 3237 | | 1620 | 3405 | | 1580 | 3183 | |
| Flt Permitted | 0.44 | 1.00 | | 0.26 | 1.00 | | 0.32 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 784 | 2911 | | 457 | 3237 | | 544 | 3405 | | 824 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 233 | 386 | 86 | 329 | 113 | 381 | 358 | 85 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 237 | 0 | 0 | 27 | 0 | 0 | 18 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 382 | 0 | 86 | 415 | 0 | 381 | 425 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 41.2 | 34.5 | | 44.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 41.2 | 34.5 | | 44.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.36 | 0.30 | | 0.39 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 335 | 873 | | 263 | 1016 | | 454 | 1309 | | 340 | 888 | |
| v/s Ratio Prot | 0.01 | c0.13 | | c0.02 | 0.13 | | c0.15 | 0.12 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | 0.10 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.14 | 0.44 | | 0.33 | 0.41 | | 0.84 | 0.32 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 24.4 | 32.4 | | 23.7 | 31.0 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.97 | |
| Incremental Delay, d2 | 0.2 | 1.6 | | 0.9 | 1.2 | | 13.1 | 0.7 | | 3.9 | 2.2 | |
| Delay (s) | 24.7 | 34.0 | | 24.6 | 32.3 | | 33.9 | 25.6 | | 32.2 | 36.4 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 33.3 | | | 31.0 | | | 29.4 | | | 35.1 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 75.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 101 | 619 | 135 | 10 | 543 | 135 | 102 | 281 | 9 | 205 | 578 | 174 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3034 | | | 3003 | | 1452 | 3227 | | 1522 | 2872 | |
| Flt Permitted | | 0.59 | | | 0.94 | | 0.21 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | | 1799 | | | 2815 | | 317 | 3227 | | 883 | 2872 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 112 | 688 | 150 | 11 | 603 | 150 | 113 | 312 | 10 | 228 | 642 | 193 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 33 | 0 | 0 | 4 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 926 | 0 | 0 | 731 | 0 | 113 | 318 | 0 | 228 | 791 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 768 | | | 736 | | 206 | 1192 | | 420 | 1060 | |
| v/s Ratio Prot | | c0.07 | | | | | c0.03 | 0.10 | | 0.03 | c0.28 | |
| v/s Ratio Perm | | c0.39 | | | 0.26 | | 0.20 | | | 0.20 | | |
| v/c Ratio | | 1.21 | | | 0.99 | | 0.55 | 0.27 | | 0.54 | 0.75 | |
| Uniform Delay, d1 | | 20.0 | | | 23.9 | | 12.3 | 14.3 | | 12.7 | 17.9 | |
| Progression Factor | | 1.00 | | | 1.46 | | 1.05 | 0.59 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 104.7 | | | 8.4 | | 9.7 | 0.5 | | 5.0 | 4.8 | |
| Delay (s) | | 124.7 | | | 43.5 | | 22.6 | 8.9 | | 17.7 | 22.7 | |
| Level of Service | | F | | | D | | C | A | | B | C | |
| Approach Delay (s) | | 124.7 | | | 43.5 | | | 12.5 | | | 21.6 | |
| Approach LOS | | F | | | D | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 56.1 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.93 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 229 | 136 | 117 | 284 | 27 | 70 | 450 | 81 | 33 | 662 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1899 | | 1600 | 2011 | | 1676 | 3217 | | 1435 | 3274 | |
| Flt Permitted | 0.47 | 1.00 | | 0.41 | 1.00 | | 0.31 | 1.00 | | 0.43 | 1.00 | |
| Satd. Flow (perm) | 852 | 1899 | | 686 | 2011 | | 552 | 3217 | | 643 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 236 | 140 | 121 | 293 | 28 | 72 | 464 | 84 | 34 | 682 | 68 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 5 | 0 | 0 | 23 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 69 | 343 | 0 | 121 | 316 | 0 | 72 | 525 | 0 | 34 | 738 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 315 | 701 | | 253 | 743 | | 263 | 1534 | | 307 | 1561 | |
| v/s Ratio Prot | c0.18 | | | 0.16 | | | 0.16 | | | c0.23 | | |
| v/s Ratio Perm | 0.08 | | | 0.18 | | | 0.13 | | | 0.05 | | |
| v/c Ratio | 0.22 | 0.49 | | 0.48 | 0.43 | | 0.27 | 0.34 | | 0.11 | 0.47 | |
| Uniform Delay, d1 | 14.1 | 15.8 | | 15.7 | 15.3 | | 10.2 | 10.6 | | 9.4 | 11.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.33 | 1.34 | | 1.00 | 1.00 | | 1.14 | 0.92 | |
| Incremental Delay, d2 | 1.6 | 2.4 | | 0.6 | 0.2 | | 2.6 | 0.6 | | 0.4 | 0.5 | |
| Delay (s) | 15.7 | 18.2 | | 21.5 | 20.7 | | 12.8 | 11.2 | | 11.1 | 11.1 | |
| Level of Service | B | B | | C | C | | B | B | | B | B | |
| Approach Delay (s) | 17.8 | | | 20.9 | | | 11.4 | | | 11.1 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.4 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 71.4% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 808 | 360 | 770 | 32 | 3 | 10 | 9 | 46 | 12 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3083 | | | | 1811 | | | 1846 | |
| Flt Permitted | | 0.95 | | 0.57 | | | | 0.96 | | | 0.87 | |
| Satd. Flow (perm) | | 3008 | | 1770 | | | | 1749 | | | 1650 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 851 | 379 | 811 | 34 | 3 | 11 | 9 | 48 | 13 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 853 | 0 | 1221 | 0 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 833 | | 856 | | | | 377 | | | 355 | |
| v/s Ratio Prot | | | | c0.13 | | | | | | | | |
| v/s Ratio Perm | | 0.28 | | c0.46 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 1.02 | | 1.80dl | | | | 0.09 | | | 0.05 | |
| Uniform Delay, d1 | | 23.5 | | 19.0 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.41 | | 0.68 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 16.3 | | 197.5 | | | | 0.5 | | | 0.3 | |
| Delay (s) | | 49.5 | | 210.5 | | | | 20.9 | | | 20.5 | |
| Level of Service | | D | | F | | | | C | | | C | |
| Approach Delay (s) | | 49.5 | | 210.5 | | | | 20.9 | | | 20.5 | |
| Approach LOS | | D | | F | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 140.9 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.01 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 14.0 | | | | |
| Intersection Capacity Utilization | | 105.6% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

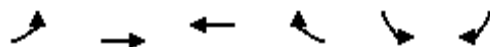


| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 276 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 291 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 294 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.19 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.23 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.85 | |
| Incremental Delay, d2 | | 130.3 | |
| Delay (s) | | 153.6 | |
| Level of Service | | F | |
| Approach Delay (s) | | 153.6 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 256 | 864 | 946 | 131 | 108 | 222 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3283 | 3260 | | 1660 | 1485 |
| Flt Permitted | | 0.53 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1759 | 3260 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 284 | 960 | 1051 | 146 | 120 | 247 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 84 |
| Lane Group Flow (vph) | 0 | 1244 | 1180 | 0 | 120 | 163 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1082 | 2006 | | 434 | 388 |
| v/s Ratio Prot | | | 0.36 | | 0.07 | |
| v/s Ratio Perm | | c0.71 | | | | c0.11 |
| v/c Ratio | | 1.46dl | 0.59 | | 0.28 | 0.42 |
| Uniform Delay, d1 | | 12.5 | 7.5 | | 19.1 | 19.9 |
| Progression Factor | | 1.26 | 0.71 | | 1.12 | 1.19 |
| Incremental Delay, d2 | | 70.3 | 0.9 | | 1.5 | 3.1 |
| Delay (s) | | 86.0 | 6.3 | | 22.9 | 26.7 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 86.0 | 6.3 | | 25.5 | |
| Approach LOS | | F | A | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 44.1 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.93 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 81.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

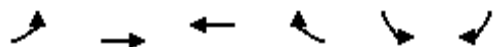
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 79 | 896 | 993 | 191 | 281 | 86 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3119 | 3112 | | 1506 | 1343 |
| Flt Permitted | | 0.69 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2172 | 3112 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 83 | 943 | 1045 | 201 | 296 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 0 | 1026 | 1222 | 0 | 296 | 43 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1136 | 1628 | | 533 | 475 |
| v/s Ratio Prot | | | 0.39 | | c0.20 | |
| v/s Ratio Perm | | c0.47 | | | | 0.03 |
| v/c Ratio | | 0.90 | 0.75 | | 0.56 | 0.09 |
| Uniform Delay, d1 | | 14.0 | 12.2 | | 16.9 | 14.0 |
| Progression Factor | | 1.12 | 1.52 | | 1.73 | 2.91 |
| Incremental Delay, d2 | | 1.3 | 1.6 | | 3.4 | 0.3 |
| Delay (s) | | 17.0 | 20.1 | | 32.5 | 41.1 |
| Level of Service | | B | C | | C | D |
| Approach Delay (s) | | 17.0 | 20.1 | | 34.5 | |
| Approach LOS | | B | C | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 21.0 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.76 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 90.4% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave






















1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 783 | 251 | 395 | 1071 | 195 | 124 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.95 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2399 | | 1788 | 2506 | 1737 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2399 | | 243 | 2506 | 1737 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 799 | 256 | 403 | 1093 | 199 | 127 |
| RTOR Reduction (vph) | 18 | 0 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 1037 | 0 | 403 | 1093 | 291 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1144 | | 116 | 1195 | 641 | |
| v/s Ratio Prot | 0.43 | | | 0.44 | c0.17 | |
| v/s Ratio Perm | | | c1.66 | | | |
| v/c Ratio | 0.91 | | 3.47 | 0.91 | 0.45 | |
| Uniform Delay, d1 | 15.7 | | 17.0 | 15.8 | 15.5 | |
| Progression Factor | 1.43 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 7.1 | | 1134.7 | 12.2 | 2.3 | |
| Delay (s) | 29.5 | | 1151.7 | 28.0 | 17.8 | |
| Level of Service | C | | F | C | B | |
| Approach Delay (s) | 29.5 | | | 330.7 | 17.8 | |
| Approach LOS | C | | | F | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 184.8 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 2.16 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 101.7% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  | |
| Volume (vph) | 1 | 1582 | 37 | 108 | 835 | 1 | 59 | 0 | 149 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.31 | 1.00 | 1.00 | 0.07 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 610 | 3431 | 1479 | 125 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1758 | 41 | 120 | 928 | 1 | 66 | 0 | 166 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 144 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1758 | 29 | 120 | 928 | 1 | 0 | 66 | 22 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 50.4 | 50.4 | 50.4 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Effective Green, g (s) | 50.4 | 50.4 | 50.4 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 362 | 2034 | 877 | 350 | 2652 | 1222 | | 165 | 161 | | | |
| v/s Ratio Prot | | c0.51 | | 0.06 | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.22 | | 0.00 | | c0.04 | 0.01 | | | |
| v/c Ratio | 0.00 | 0.86 | 0.03 | 0.34 | 0.35 | 0.00 | | 0.40 | 0.14 | | | |
| Uniform Delay, d1 | 7.1 | 14.4 | 7.2 | 12.8 | 2.4 | 1.7 | | 35.4 | 34.4 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 5.2 | 0.1 | 0.6 | 0.1 | 0.0 | | 1.6 | 0.4 | | | |
| Delay (s) | 7.1 | 19.6 | 7.3 | 13.4 | 2.5 | 1.7 | | 37.0 | 34.8 | | | |
| Level of Service | A | B | A | B | A | A | | D | C | | | |
| Approach Delay (s) | | 19.4 | | | 3.7 | | | 35.4 | | | 0.0 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 67.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















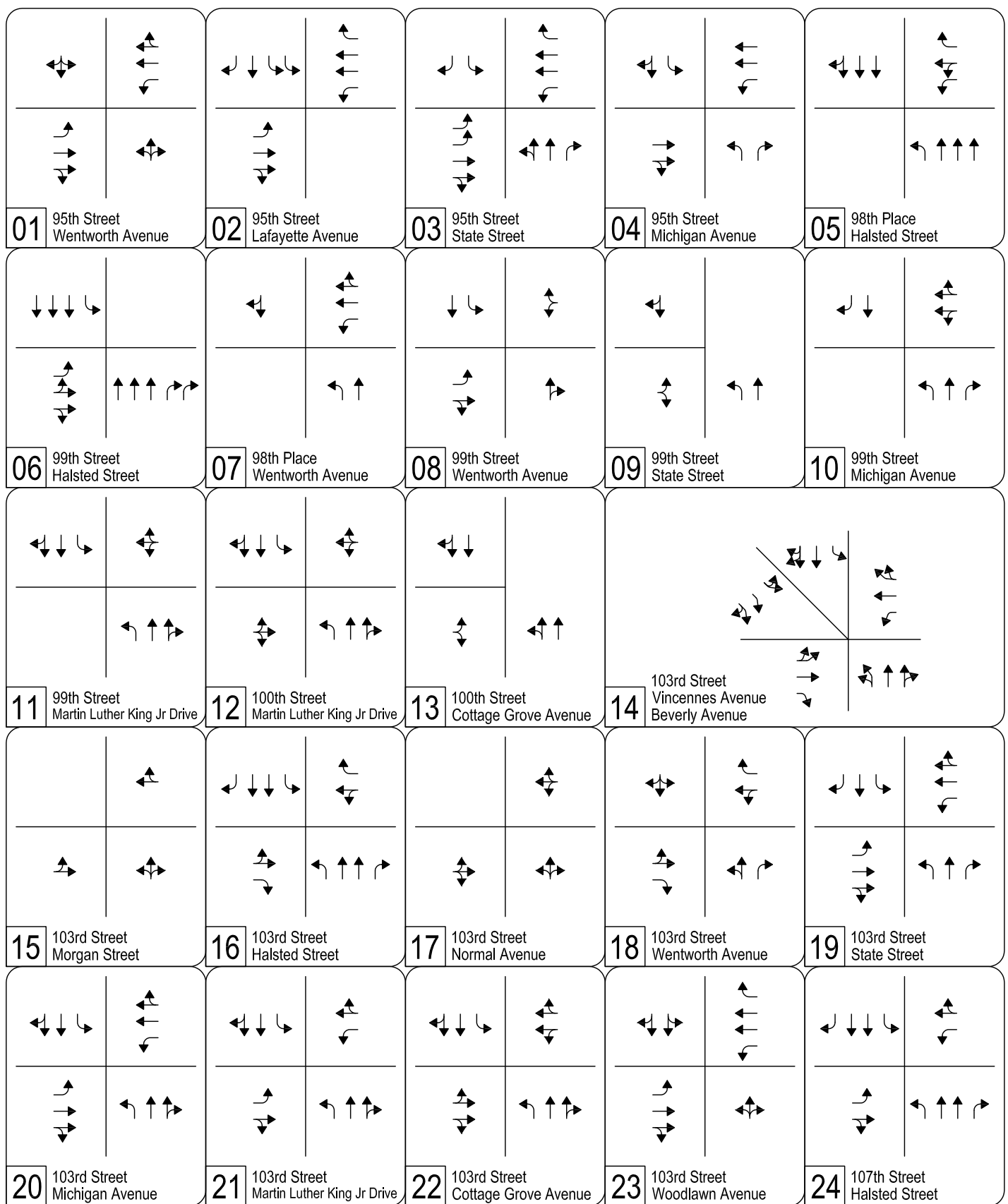
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 938 | 813 | 29 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2913 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1042 | 903 | 32 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1054 | 932 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.30 | | c0.06 | |
| v/s Ratio Perm | | c0.36 | | | | |
| v/c Ratio | | 0.99 | 0.43 | | 0.73 | |
| Uniform Delay, d1 | | 28.3 | 5.4 | | 40.6 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 24.6 | 0.2 | | 32.1 | |
| Delay (s) | | 52.9 | 0.3 | | 72.7 | |
| Level of Service | | D | A | | E | |
| Approach Delay (s) | | 52.9 | 0.3 | | 72.7 | |
| Approach LOS | | D | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.2 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.75 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 48.1% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

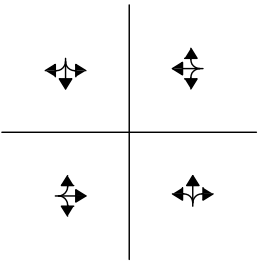
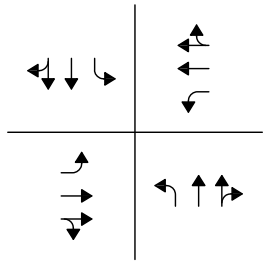
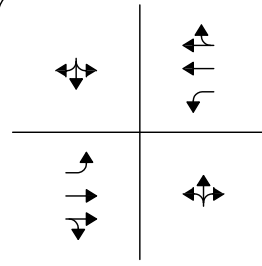
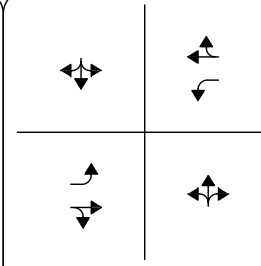
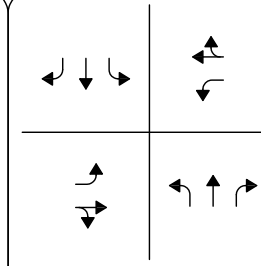
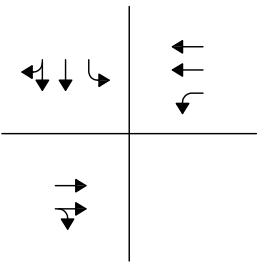
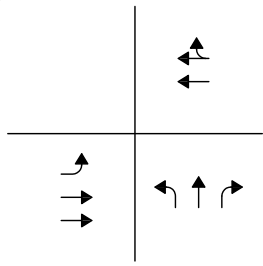
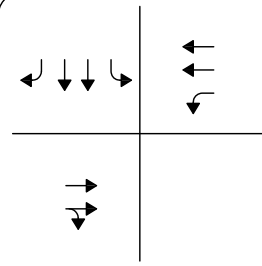
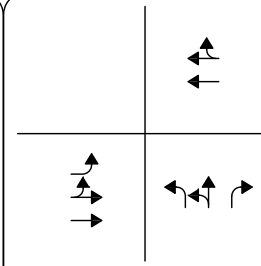
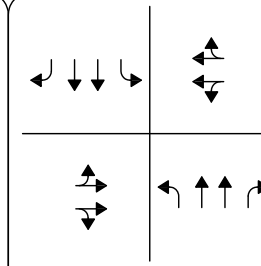
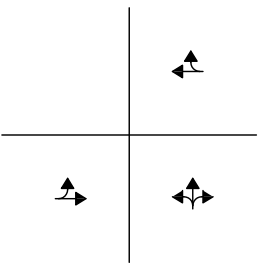
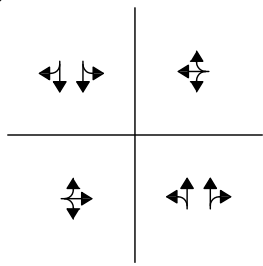
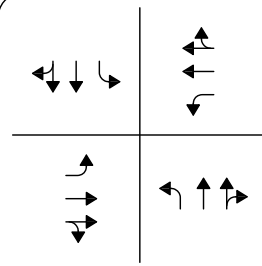
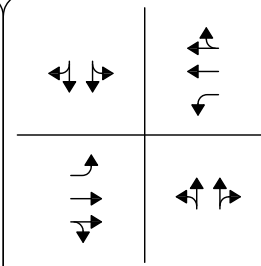
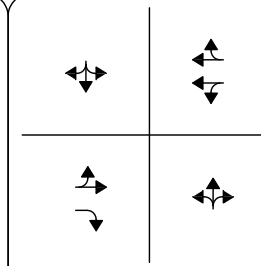
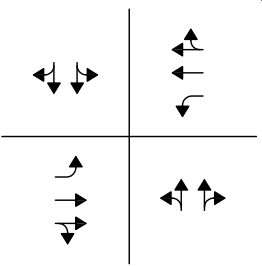
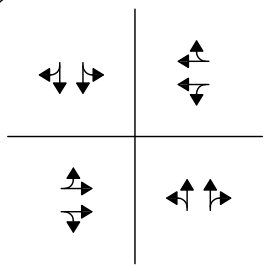
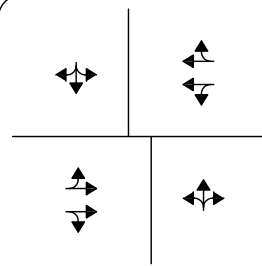
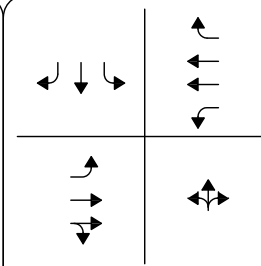
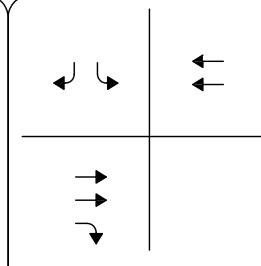
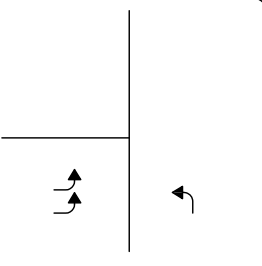
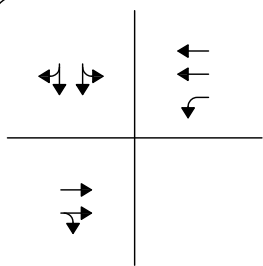
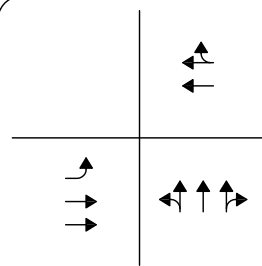
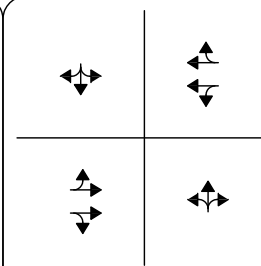
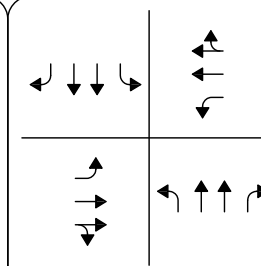
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 98 | 516 | 0 | 1 | 571 | 38 | 3 | 2 | 28 | 192 | 0 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1765 | | | 3341 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.79 | | | 0.95 | | | 0.93 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1409 | | | 3191 | | | 1370 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 573 | 0 | 1 | 634 | 42 | 3 | 2 | 31 | 213 | 0 | 157 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 105 |
| Lane Group Flow (vph) | 0 | 682 | 0 | 0 | 671 | 0 | 0 | 8 | 0 | 0 | 213 | 52 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | pm+pt | | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 514 | | | 1714 | | | 145 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.48 | | | 0.14 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.33 | | | 0.39 | | | 0.06 | | | 0.45 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 11.9 | | | 34.2 | | | 24.4 | 19.9 |
| Progression Factor | | 1.00 | | | 1.31 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 160.1 | | | 0.1 | | | 0.8 | | | 3.0 | 0.5 |
| Delay (s) | | 187.1 | | | 15.6 | | | 34.9 | | | 27.4 | 20.4 |
| Level of Service | | F | | | B | | | C | | | C | C |
| Approach Delay (s) | | 187.1 | | | 15.6 | | | 34.9 | | | 24.4 | |
| Approach LOS | | F | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 84.1 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | 14.0 | | | | |
| Intersection Capacity Utilization | | | 80.5% | | | ICU Level of Service | | D | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



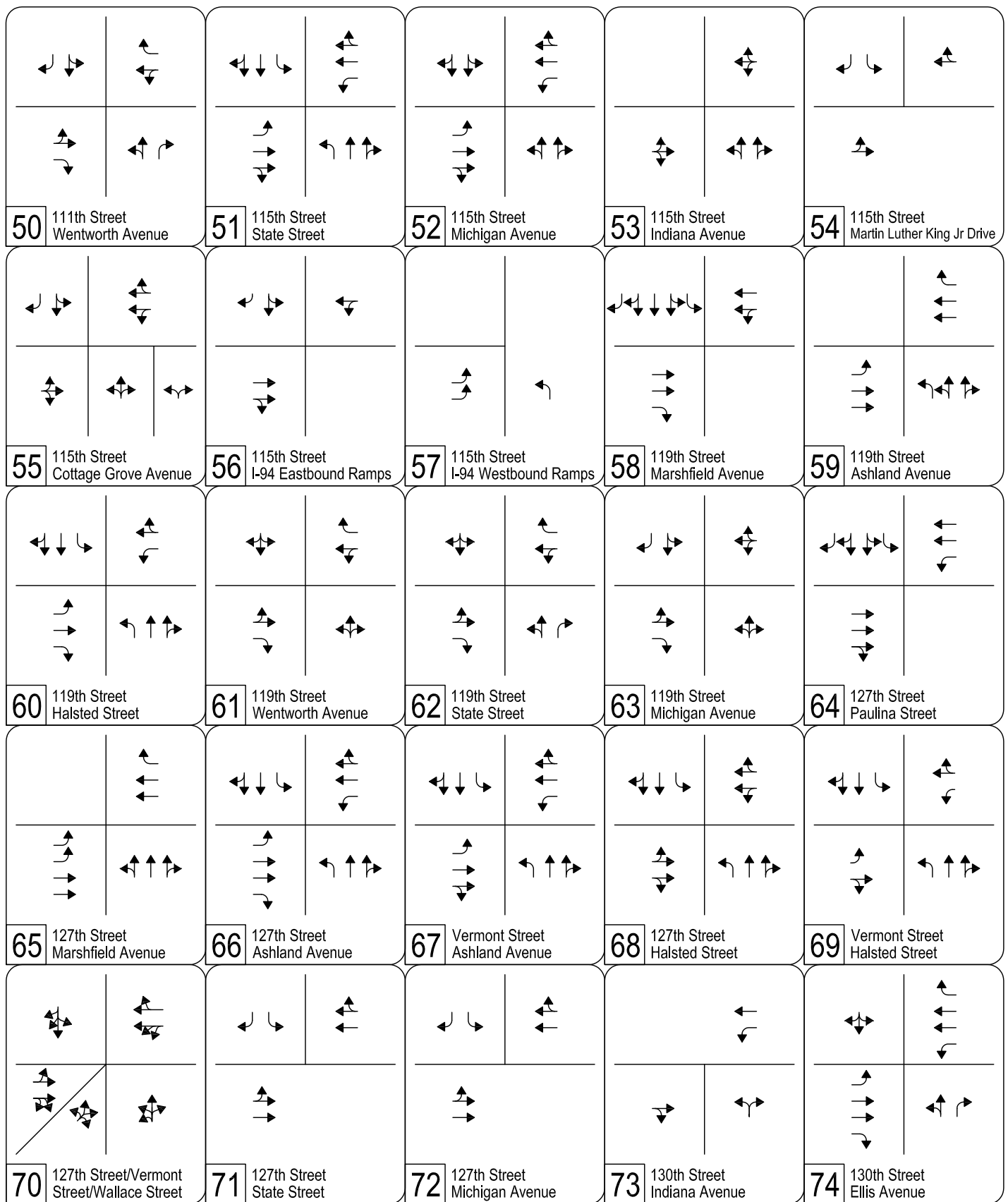
BRT Alternative (2030) Intersection Lane Geometry

Page 1 of 3

| | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| 25 107th Street Wentworth Avenue | 26 107th Street State Street | 27 107th Street Michigan Avenue | 28 107th Street Martin Luther King Jr Drive | 29 107th Street Cottage Grove Avenue |
|  |  |  |  |  |
| 30 111th Street Marshfield Avenue | 31 111th Street Hamlet Avenue | 32 112th Place Marshfield Avenue | 33 112th Place Hamlet Avenue | 34 111th Street Halsted Street |
|  |  |  |  |  |
| 35 111th Street Normal Avenue | 36 111th Street Wentworth Avenue | 37 111th Street State Street | 38 111th Street Michigan Avenue | 39 111th Street Indiana Avenue |
|  |  |  |  |  |
| 40 111th Street Martin Luther King Jr Drive | 41 111th Street Cottage Grove Avenue | 42 111th Street Ellis Avenue | 43 111th Street Doty Road | 44 111th Street I-94 Eastbound Ramps |
|  |  |  |  |  |
| 45 111th Street I-94 Westbound Ramps | 46 115th Street Marshfield Avenue | 47 115th Street Ashland Avenue | 48 115th Street Racine Road | 49 115th Street Halsted Street |

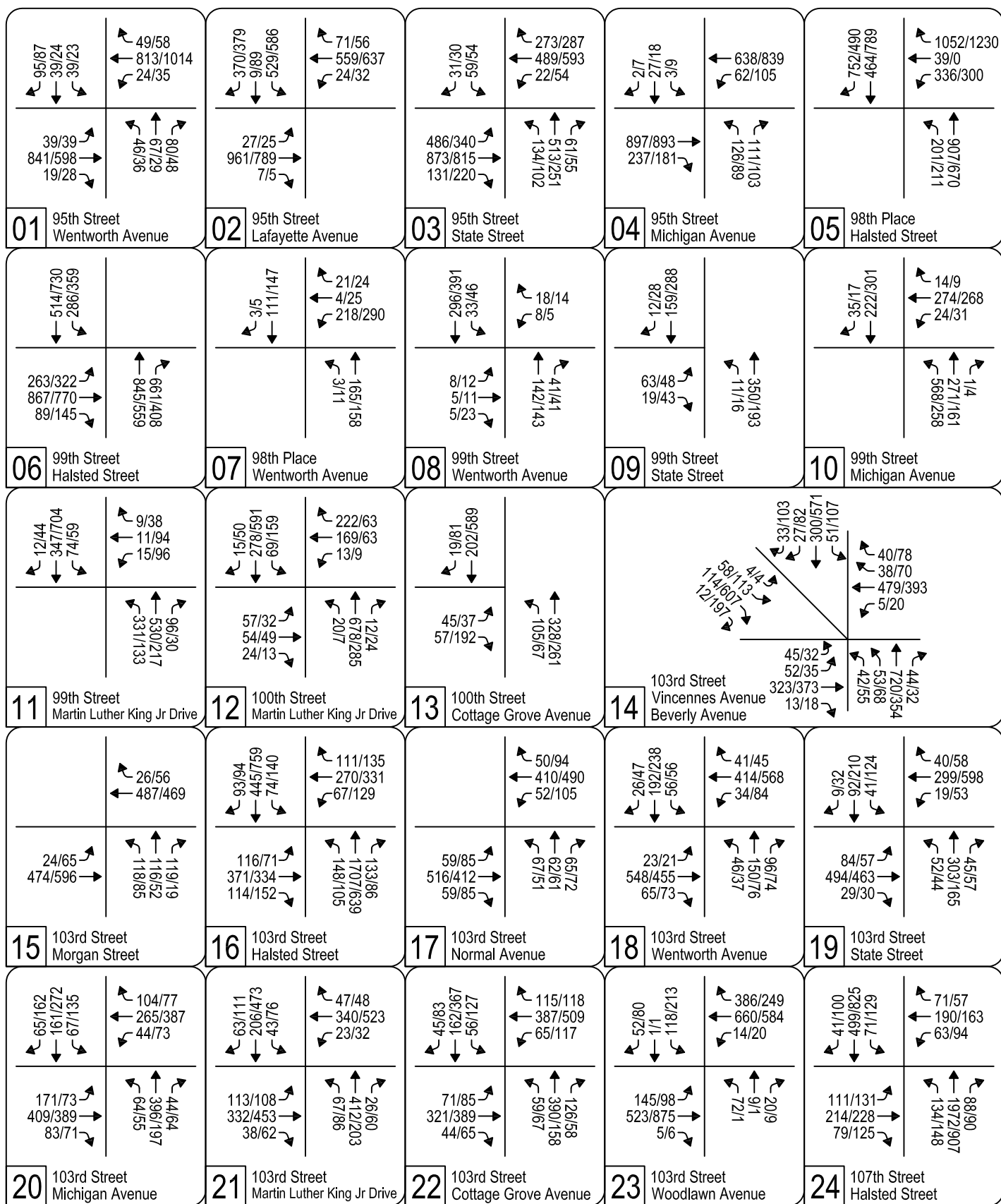
BRT Alternative (2030) Intersection Lane Geometry

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BRT Alternative (2030) Intersection Lane Geometry

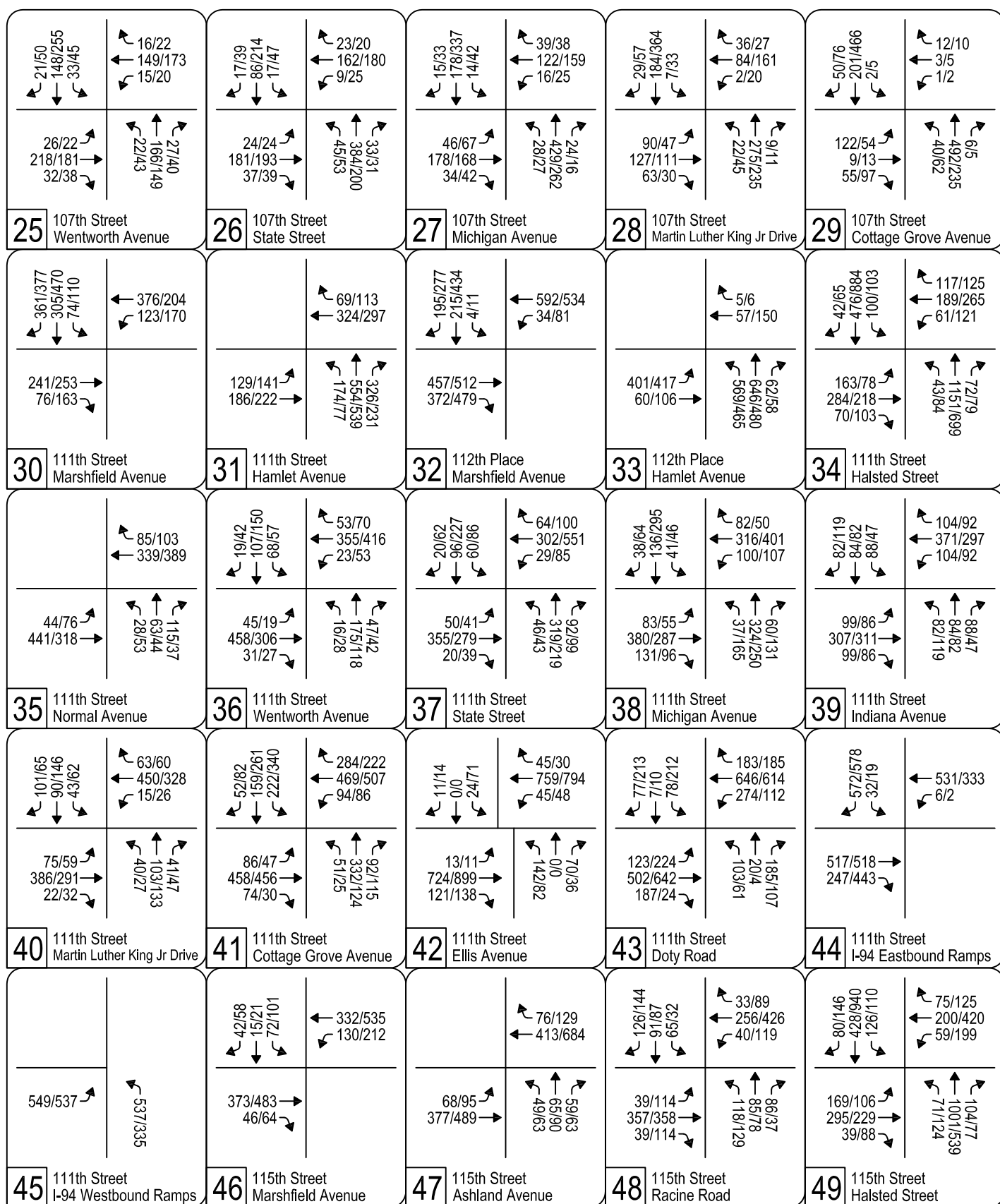
Page 3 of 3



BRT Alternative (2030) Intersection Traffic Volumes

Page 1 of 3

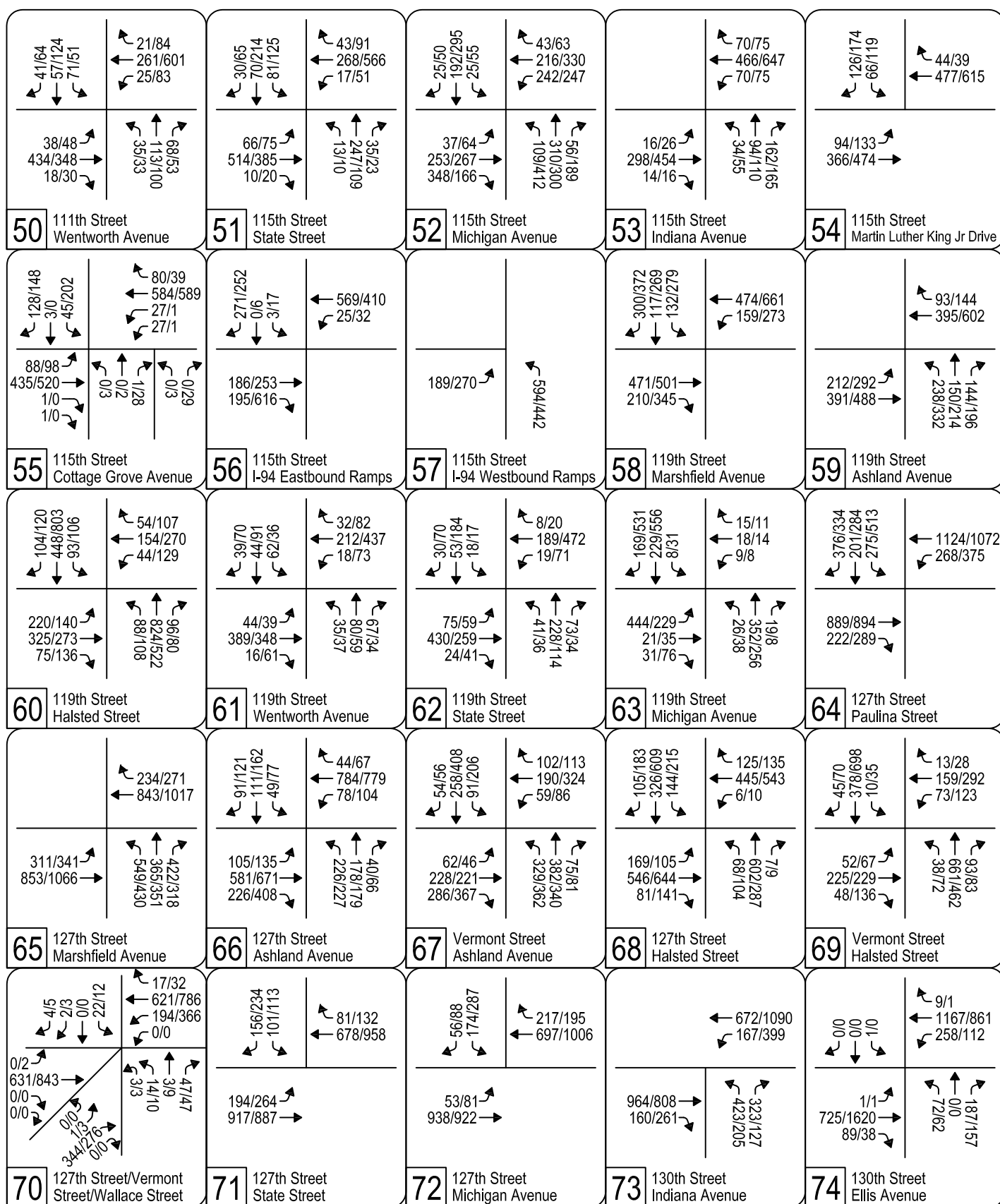
Legend: AM/PM Peak Hour Volumes



BRT Alternative (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



BRT Alternative (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 67 | 80 | 39 | 39 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1754 | | | 1670 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1526 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 71 | 84 | 41 | 41 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 164 | 0 | 0 | 123 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 540 | |
| v/s Ratio Prot | | c0.30 | | | 0.30 | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.7 | | | 16.4 | | | 15.7 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.1 | | | 13.5 | | | 16.4 | | | 15.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 71 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 75 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 42 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.08 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.15 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.6 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.62 | 1.93 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.7 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.1 | 48.9 | | 4.4 | 9.8 | 26.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 11.5 | | | 0.0 | | | 55.4 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 489 | 273 | 134 | 513 | 61 | 59 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.95 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 515 | 287 | 141 | 540 | 64 | 62 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 512 | 1048 | 0 | 23 | 515 | 129 | 0 | 681 | 39 | 62 | 0 | 3 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.31 | 0.48 | | 0.07 | 0.24 | 0.24 | | 0.24 | 0.24 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 982 | 1482 | | 108 | 697 | 225 | | 787 | 338 | 66 | | 57 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.18 | | | c0.21 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.52 | 0.71 | | 0.21 | 0.74 | 0.57 | | 0.87 | 0.11 | 0.94 | | 0.04 |
| Uniform Delay, d1 | 37.1 | 26.8 | | 57.2 | 45.8 | 43.6 | | 47.5 | 38.8 | 59.7 | | 55.6 |
| Progression Factor | 0.75 | 0.22 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.89 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.9 | 1.3 | | 4.5 | 6.9 | 10.1 | | 12.1 | 0.7 | 88.5 | | 0.3 |
| Delay (s) | 28.8 | 7.1 | | 61.6 | 52.7 | 53.8 | | 56.9 | 35.2 | 148.2 | | 55.9 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 14.2 | | | 53.3 | | | 55.0 | | | 116.1 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.6 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | 13.0 | | | |
| Intersection Capacity Utilization | | | 72.8% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 897 | 237 | 62 | 638 | 0 | 126 | 0 | 111 | 3 | 27 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2852 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1961 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2852 | | 260 | 3005 | | 1078 | | 1465 | 1803 | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 263 | 69 | 709 | 0 | 140 | 0 | 123 | 3 | 30 | 2 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1236 | 0 | 69 | 709 | 0 | 140 | 0 | 46 | 3 | 31 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | 2 | | 2 | | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 |
| Lane Grp Cap (vph) | | 1711 | | 156 | 1803 | | 345 | | 469 | 577 | | 628 |
| v/s Ratio Prot | | c0.43 | | | 0.24 | | | | | | | 0.02 |
| v/s Ratio Perm | | | | 0.27 | | c0.13 | | | 0.03 | 0.00 | | |
| v/c Ratio | | 0.72 | | 0.44 | 0.39 | | 0.41 | | 0.10 | 0.01 | | 0.05 |
| Uniform Delay, d1 | | 14.1 | | 10.9 | 10.5 | | 26.6 | | 23.9 | 23.2 | | 23.5 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 2.7 | | 8.8 | 0.6 | | 3.5 | | 0.4 | 0.0 | | 0.1 |
| Delay (s) | | 16.8 | | 19.7 | 11.1 | | 30.1 | | 24.3 | 23.2 | | 23.6 |
| Level of Service | | B | | B | B | | C | | C | C | | C |
| Approach Delay (s) | | 16.8 | | | 11.9 | | | 27.4 | | | | 23.6 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 62.1% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 336 | 39 | 1052 | 201 | 907 | 0 | 0 | 464 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3933 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3933 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 926 | 0 | 0 | 473 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 926 | 0 | 0 | 1240 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1161 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.76 | 0.08 | 2.54 | 0.43 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.6 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.6 | 0.3 | 698.4 | 2.0 | 0.2 | | | 46.6 | |
| Delay (s) | | | | 45.2 | 27.1 | 735.9 | 21.2 | 22.1 | | | 83.6 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.8 | | | 21.9 | | | 83.6 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.3 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 89 | 0 | 0 | 0 | 0 | 845 | 661 | 286 | 514 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 92 | 0 | 0 | 0 | 0 | 871 | 681 | 295 | 530 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1006 | 0 | 0 | 0 | 0 | 0 | 871 | 681 | 295 | 530 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.11 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.46 | 1.06 | 0.43 | |
| Incremental Delay, d2 | 3.7 | 22.8 | | | | | | 0.4 | 77.5 | 2.4 | 0.1 | |
| Delay (s) | 32.4 | 57.9 | | | | | | 15.7 | 95.2 | 36.4 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 52.9 | | | 0.0 | | | 50.6 | | | 15.8 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.5 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|-------|-------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | | ↰ | ↱ | | | ↱ | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 165 | 0 | 0 | 111 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1960 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 788 | 1882 | | | 1960 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 183 | 0 | 0 | 123 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 183 | 0 | 0 | 125 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | | pm+pt | | | | |
| Protected Phases | | | | | 8 | | | 7 | 2 | | 6 | |
| Permitted Phases | | | | 8 | | | | 2 | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | | 0.59 | 0.59 | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | | 4.0 | 4.0 | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | | 504 | 1107 | | 1061 | |
| v/s Ratio Prot | | | | | 0.00 | | | 0.00 | c0.10 | | 0.06 | |
| v/s Ratio Perm | | | | c0.15 | | | | 0.00 | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | | 0.01 | 0.17 | | 0.12 | |
| Uniform Delay, d1 | | | | 23.4 | 19.9 | | | 9.9 | 8.0 | | 9.6 | |
| Progression Factor | | | | 1.00 | 1.00 | | | 1.06 | 1.19 | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | | 0.0 | 0.3 | | 0.2 | |
| Delay (s) | | | | 26.7 | 19.9 | | | 10.5 | 9.8 | | 9.8 | |
| Level of Service | | | | C | B | | | B | A | | A | |
| Approach Delay (s) | | 0.0 | | | 26.0 | | | | 9.8 | | 9.8 | |
| Approach LOS | | A | | | C | | | | A | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 8 | 0 | 18 | 0 | 142 | 41 | 33 | 296 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.91 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1603 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1509 | 1809 | | | 1558 | | | 1686 | | 1010 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 8 | 0 | 19 | 0 | 149 | 43 | 35 | 312 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 14 | 0 | 0 | 180 | 0 | 35 | 312 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 479 | 575 | | | 495 | | | 793 | | 642 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.03 | | | 0.23 | | 0.05 | 0.30 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.99 | 0.90 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.1 | | | 14.0 | | 8.6 | 8.6 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.1 | | | 14.0 | | | 8.6 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 19 | 11 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1782 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1782 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 21 | 12 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 14 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 77 | 0 | 12 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 576 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.31 | 0.51 | 1.12 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.4 | 8.6 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.6 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↕↕ | | ↕ | ↑ | | | ↑ | ↕ |
| Volume (vph) | 0 | 0 | 0 | 24 | 274 | 14 | 568 | 271 | 1 | 0 | 222 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3737 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.54 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3737 | | 943 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 27 | 304 | 16 | 631 | 301 | 1 | 0 | 247 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 343 | 0 | 631 | 302 | 0 | 0 | 247 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 650 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.17 | | | 0.15 | |
| v/s Ratio Perm | | | | | | | c0.47 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.97 | 0.29 | | | 0.34 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.9 | 8.2 | | | 15.4 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 28.8 | 0.7 | | | 1.3 | 0.1 |
| Delay (s) | | | | | 23.2 | | 46.7 | 8.9 | | | 16.7 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 34.5 | | | 16.2 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.6 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 64.8% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 15 | 11 | 9 | 331 | 530 | 96 | 74 | 347 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.97 | | 1.00 | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1803 | | 1692 | 3237 | | 1707 | 3353 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1803 | | 882 | 3237 | | 563 | 3353 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 17 | 12 | 10 | 368 | 589 | 107 | 82 | 386 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 32 | 0 | 368 | 676 | 0 | 82 | 396 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 553 | | 558 | 1467 | | 415 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.06 | | 0.66 | 0.46 | | 0.20 | 0.26 | |
| Uniform Delay, d1 | | | | | 18.4 | | 13.9 | 14.2 | | 12.4 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.5 | 1.0 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.6 | | 15.1 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.6 | | | 12.7 | | | 13.2 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 10.0 | | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↔ | ↔ | | ↔ | ↔ | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 678 | 12 | 69 | 278 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3132 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.56 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 947 | 3232 | | 573 | 3132 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 714 | 13 | 73 | 293 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 725 | 0 | 73 | 304 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 530 | 1810 | | 321 | 1754 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.10 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.4 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.17 | 0.07 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.0 | 0.8 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 10.0 | | | 1.2 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 69.9% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 328 | 202 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 364 | 224 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 238 | 243 | 150 | 96 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.2 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 624 | 652 | 683 | 641 | 659 | |
| Control Delay (s) | 9.3 | 10.2 | 9.7 | 8.8 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 323 | 13 | 5 | 479 | 38 | 40 | 42 | 53 | 720 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3291 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.55 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 984 | 1731 | 1487 | | | 700 | 3291 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 359 | 14 | 6 | 532 | 42 | 44 | 47 | 59 | 800 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 359 | 7 | 6 | 532 | 55 | 0 | 0 | 106 | 844 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 300 | 528 | 453 | | | 167 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.21 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.44 | 0.01 | 0.02 | 1.01 | 0.12 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.2 | 18.2 | 14.5 | 25.5 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.7 | 0.0 | 0.1 | 41.1 | 0.6 | | | 17.0 | 54.9 | |
| Delay (s) | | 24.1 | 19.9 | 14.5 | 25.7 | 77.6 | 26.9 | | | 52.9 | 94.9 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.7 | | | 70.1 | | | | | 90.3 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.2 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 51 | 300 | 27 | 33 | 4 | 58 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 333 | 30 | 37 | 4 | 64 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 57 | 392 | 0 | 0 | 0 | 68 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | 6 | | | | 9 | | 9 | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.19 | | | | | | c0.05 | |
| v/c Ratio | 0.84 | 0.51 | | | | 0.24 | 0.31 | |
| Uniform Delay, d1 | 38.4 | 35.1 | | | | 38.0 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 69.9 | 2.4 | | | | 2.0 | 1.8 | |
| Delay (s) | 108.3 | 37.5 | | | | 39.9 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 46.3 | | | | 40.1 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 474 | 0 | 0 | 487 | 26 | 118 | 116 | 119 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1770 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1596 | | | 1930 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 527 | 0 | 0 | 541 | 29 | 131 | 129 | 132 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 554 | 0 | 0 | 570 | 0 | 0 | 392 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 761 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.73 | | | 0.62 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 13.6 | | | 12.6 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.0 | | | 3.1 | | | 3.1 | | | | |
| Delay (s) | | 19.7 | | | 15.8 | | | 18.1 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 19.7 | | | 15.8 | | | 18.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 74.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 371 | 114 | 67 | 270 | 111 | 148 | 1707 | 133 | 74 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1922 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.65 | 1.00 | | 0.57 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1270 | 1426 | | 1113 | 1396 | 627 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 391 | 120 | 71 | 284 | 117 | 156 | 1797 | 140 | 78 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 0 | 69 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 513 | 49 | 0 | 355 | 48 | 156 | 1797 | 110 | 78 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 520 | 584 | | 456 | 572 | 389 | 1307 | 542 | 148 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.40 | 0.03 | | 0.32 | 0.03 | 0.17 | | 0.09 | 0.21 | | 0.03 |
| v/c Ratio | | 0.99 | 0.08 | | 0.78 | 0.08 | 0.40 | 1.37 | 0.20 | 0.53 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 30.7 | 19.0 | | 26.9 | 19.0 | 14.7 | 30.4 | 19.2 | 23.2 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.15 | 0.76 | 0.42 |
| Incremental Delay, d2 | | 35.7 | 0.3 | | 12.3 | 0.3 | 0.7 | 173.6 | 0.8 | 3.3 | 0.9 | 0.3 |
| Delay (s) | | 66.4 | 19.2 | | 39.2 | 19.2 | 15.4 | 204.0 | 20.0 | 29.9 | 17.9 | 8.3 |
| Level of Service | | E | B | | D | B | B | F | C | C | B | A |
| Approach Delay (s) | | 57.4 | | | 34.3 | | | 177.6 | | | 17.9 | |
| Approach LOS | | E | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 113.4 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 1.13 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 113.8% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 516 | 59 | 52 | 410 | 50 | 67 | 62 | 65 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1629 | | | 1627 | | | 1770 | | | | |
| Flt Permitted | | 0.91 | | | 0.89 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1494 | | | 1459 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 573 | 66 | 58 | 456 | 56 | 74 | 69 | 72 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 699 | 0 | 0 | 564 | 0 | 0 | 187 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 873 | | | 853 | | | 517 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | 0.39 | | | 0.11 | | | | |
| v/c Ratio | | 0.80 | | | 0.66 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 10.5 | | | 9.1 | | | 18.2 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.6 | | | 4.0 | | | 2.0 | | | | |
| Delay (s) | | 18.2 | | | 13.1 | | | 20.2 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 18.2 | | | 13.1 | | | 20.2 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 64.6% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

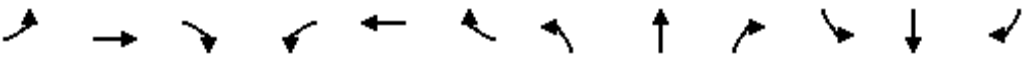










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 23 | 548 | 65 | 34 | 414 | 41 | 46 | 150 | 96 | 56 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1634 | 1288 | | 1663 | 1490 | | 1775 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.89 | 1.00 | | 0.90 | |
| Satd. Flow (perm) | | 1619 | 1255 | | 1536 | 1288 | | 1493 | 1490 | | 1613 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 24 | 577 | 68 | 36 | 436 | 43 | 48 | 158 | 101 | 59 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 69 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 601 | 39 | 0 | 472 | 26 | 0 | 206 | 32 | 0 | 283 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 928 | 720 | | 881 | 738 | | 478 | 477 | | 516 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.37 | 0.03 | | 0.31 | 0.02 | | 0.14 | 0.02 | | c0.18 | |
| v/c Ratio | | 0.65 | 0.05 | | 0.54 | 0.03 | | 0.43 | 0.07 | | 0.55 | |
| Uniform Delay, d1 | | 10.9 | 7.0 | | 9.9 | 7.0 | | 20.1 | 17.7 | | 21.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.5 | 0.1 | | 2.3 | 0.1 | | 2.8 | 0.3 | | 4.2 | |
| Delay (s) | | 14.3 | 7.2 | | 12.2 | 7.1 | | 22.9 | 18.0 | | 25.2 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.6 | | | 11.8 | | | 21.3 | | | 25.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 92.0% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 494 | 29 | 19 | 299 | 40 | 52 | 303 | 45 | 41 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1463 | 2993 | | 1459 | 3530 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.53 | 1.00 | | 0.39 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 809 | 2993 | | 602 | 3530 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 549 | 32 | 21 | 332 | 44 | 58 | 337 | 50 | 46 | 102 | 10 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 16 | 0 | 0 | 0 | 26 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 93 | 575 | 0 | 21 | 360 | 0 | 58 | 337 | 24 | 46 | 102 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 386 | 1427 | | 287 | 1684 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.19 | | | 0.10 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.24 | 0.40 | | 0.07 | 0.21 | | 0.13 | 0.51 | 0.05 | 0.16 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 11.0 | | 9.2 | 9.9 | | 12.3 | 14.7 | 11.9 | 12.5 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.63 | 0.77 | 0.35 | 0.55 | 0.55 | 0.31 |
| Incremental Delay, d2 | 1.5 | 0.8 | | 0.5 | 0.3 | | 0.6 | 2.8 | 0.2 | 1.2 | 0.6 | 0.0 |
| Delay (s) | 11.5 | 11.9 | | 9.7 | 10.2 | | 8.3 | 14.0 | 4.3 | 8.1 | 7.5 | 3.7 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.8 | | | 10.2 | | | 12.2 | | | 7.4 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 171 | 409 | 83 | 44 | 265 | 104 | 64 | 396 | 44 | 67 | 161 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 3059 | | 1588 | 2939 | | 1542 | 3028 | | 1405 | 2760 | |
| Flt Permitted | 0.51 | 1.00 | | 0.42 | 1.00 | | 0.60 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 784 | 3059 | | 707 | 2939 | | 981 | 3028 | | 652 | 2760 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 180 | 431 | 87 | 46 | 279 | 109 | 67 | 417 | 46 | 71 | 169 | 68 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 180 | 518 | 0 | 46 | 388 | 0 | 67 | 452 | 0 | 71 | 197 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 376 | 1468 | | 339 | 1411 | | 405 | 1252 | | 269 | 1141 | |
| v/s Ratio Prot | 0.17 | | | 0.13 | | | 0.15 | | | 0.07 | | |
| v/s Ratio Perm | 0.23 | | | 0.07 | | | 0.07 | | | 0.11 | | |
| v/c Ratio | 0.48 | 0.35 | | 0.14 | 0.27 | | 0.17 | 0.36 | | 0.26 | 0.17 | |
| Uniform Delay, d1 | 13.2 | 12.2 | | 10.8 | 11.7 | | 13.9 | 15.2 | | 14.5 | 13.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.3 | 0.7 | | 0.8 | 0.5 | | 0.9 | 0.8 | | 2.4 | 0.3 | |
| Delay (s) | 17.5 | 12.9 | | 11.7 | 12.2 | | 14.7 | 16.0 | | 16.9 | 14.2 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 14.1 | | | 12.1 | | | 15.8 | | | 14.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 54.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 113 | 332 | 38 | 23 | 340 | 47 | 67 | 412 | 26 | 43 | 206 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1842 | | 1534 | 3073 | | 1372 | 2867 | |
| Flt Permitted | 0.43 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 700 | 1576 | | 708 | 1842 | | 933 | 3073 | | 597 | 2867 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 119 | 349 | 40 | 24 | 358 | 49 | 71 | 434 | 27 | 45 | 217 | 66 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 119 | 389 | 0 | 24 | 407 | 0 | 71 | 461 | 0 | 45 | 283 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 438 | 738 | | 356 | 793 | | 327 | 730 | | 193 | 627 | |
| v/s Ratio Prot | c0.02 | c0.25 | | 0.00 | 0.22 | | c0.01 | c0.15 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.27 | 0.53 | | 0.07 | 0.51 | | 0.22 | 0.63 | | 0.23 | 0.45 | |
| Uniform Delay, d1 | 14.0 | 16.0 | | 15.1 | 17.7 | | 21.6 | 29.1 | | 26.1 | 28.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.7 | | 0.1 | 2.4 | | 0.3 | 4.1 | | 0.6 | 2.3 | |
| Delay (s) | 14.3 | 18.6 | | 15.1 | 20.1 | | 21.9 | 33.2 | | 26.8 | 31.1 | |
| Level of Service | B | B | | B | C | | C | C | | C | C | |
| Approach Delay (s) | | 17.6 | | | 19.8 | | | 31.7 | | | 30.5 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 64.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 71 | 321 | 44 | 65 | 387 | 115 | 59 | 390 | 126 | 56 | 162 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3492 | | | 2914 | | 1614 | 3156 | | 1581 | 2901 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2730 | | | 2467 | | 1034 | 3156 | | 628 | 2901 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 79 | 357 | 49 | 72 | 430 | 128 | 66 | 433 | 140 | 62 | 180 | 50 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 485 | 0 | 0 | 630 | 0 | 66 | 573 | 0 | 62 | 230 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1238 | | | 1118 | | 455 | 1389 | | 276 | 1276 | |
| v/s Ratio Prot | | | | | | | c0.18 | | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.26 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.15 | 0.41 | | 0.22 | 0.18 | |
| Uniform Delay, d1 | | 13.6 | | | 15.1 | | 12.6 | 14.4 | | 13.0 | 12.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.1 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.6 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.1 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.6 | | | 17.1 | | | 15.1 | | | 13.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.9% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 523 | 5 | 14 | 660 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 582 | 3144 | | 720 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 581 | 6 | 16 | 733 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 586 | 0 | 16 | 733 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | Perm | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | 6 | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 6 | | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | 16.7 | | 16.7 | | | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | 16.7 | | 16.7 | | | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 8.0 | | 8.0 | | | |
| Lane Grp Cap (vph) | 379 | 2046 | | 468 | 2119 | 948 | 274 | | 566 | | | |
| v/s Ratio Prot | 0.19 | | | 0.23 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | | 0.19 | | c0.09 | | 0.06 | |
| v/c Ratio | 0.42 | 0.29 | | 0.03 | 0.35 | 0.29 | 0.36 | | 0.26 | | | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | 22.6 | | 22.0 | | | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 3.5 | 0.4 | | 0.1 | 0.4 | 0.8 | 3.5 | | 1.0 | | | |
| Delay (s) | 9.4 | 5.7 | | 4.5 | 6.0 | 6.1 | 26.1 | | 23.0 | | | |
| Level of Service | A | A | | A | A | A | C | | C | | | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | 26.1 | | 23.0 | | | |
| Approach LOS | A | | | A | | | C | | C | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 8.6 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 70.7 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 56.2% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 79 | 63 | 190 | 71 | 134 | 1972 | 88 | 71 | 499 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1496 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.31 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1496 | | 513 | 1584 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 83 | 66 | 200 | 75 | 141 | 2076 | 93 | 75 | 525 | 43 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 292 | 0 | 66 | 259 | 0 | 141 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 387 | | 230 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.20 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.76 | | 0.29 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.70 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.9 | | 3.1 | 7.2 | | 2.8 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.9 | | 25.0 | 35.2 | | 11.0 | 309.6 | 8.1 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 38.2 | | | 33.2 | | | 279.3 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.2 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 218 | 32 | 15 | 149 | 16 | 22 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1837 | | | 1839 | | | 1899 | | | 1931 | |
| Flt Permitted | | 0.97 | | | 0.97 | | | 0.96 | | | 0.94 | |
| Satd. Flow (perm) | | 1782 | | | 1791 | | | 1840 | | | 1822 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 33 | 15 | 154 | 16 | 23 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 278 | 0 | 0 | 180 | 0 | 0 | 214 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 849 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.10 | | | c0.12 | | | 0.11 | |
| v/c Ratio | | 0.38 | | | 0.24 | | | 0.25 | | | 0.24 | |
| Uniform Delay, d1 | | 13.2 | | | 12.3 | | | 10.7 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.66 | | | 1.11 | | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 0.8 | | | 0.7 | | | 0.7 | |
| Delay (s) | | 14.6 | | | 9.0 | | | 12.5 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.6 | | | 9.0 | | | 12.5 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 37 | 9 | 162 | 23 | 45 | 384 | 33 | 17 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 2989 | | 1302 | 3018 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.62 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 960 | 2989 | | 825 | 3018 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 41 | 10 | 180 | 26 | 50 | 427 | 37 | 19 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 18 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 216 | 0 | 10 | 188 | 0 | 50 | 454 | 0 | 19 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 281 | 874 | | 241 | 882 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.05 | | | 0.03 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.4 | | 5.9 | 6.6 | | 5.8 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.76 | 0.74 | | 0.92 | 0.95 | | 0.52 | 0.46 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.8 | 13.5 | | 12.8 | 13.4 | | 5.6 | 6.6 | | 3.1 | 2.8 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.4 | | | 13.4 | | | 6.5 | | | 2.8 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 39 | 28 | 429 | 24 | 14 | 178 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2866 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1046 | 2952 | | 965 | 2866 | | | 1838 | | | 1742 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 43 | 31 | 477 | 27 | 16 | 198 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 26 | 0 | 0 | 3 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 532 | 0 | 0 | 227 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 418 | 1181 | | 386 | 1146 | | | 877 | | | 831 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.29 | | | 0.13 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.61 | | | 0.27 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.5 | | | 10.2 | |
| Progression Factor | 1.02 | 0.93 | | 0.85 | 0.87 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 3.0 | | | 0.8 | |
| Delay (s) | 13.1 | 12.1 | | 10.4 | 11.0 | | | 15.3 | | | 11.0 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.3 | | | 11.0 | | | 15.3 | | | 11.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 60.5% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 90 | 127 | 63 | 2 | 84 | 36 | 22 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1876 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.56 | 1.00 | | | 0.97 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1876 | | 942 | 1870 | | | 1925 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 70 | 2 | 93 | 40 | 24 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 211 | 0 | 2 | 133 | 0 | 0 | 340 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 577 | | 290 | 575 | | | 1096 | | | 1091 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.37 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.6 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.91 | 0.90 | | 0.89 | 0.92 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.8 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.6 | 17.6 | | 14.0 | 16.4 | | | 8.0 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.6 | | | 16.3 | | | 8.0 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.1% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

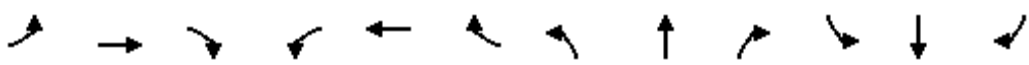
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.46 | 2.41 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.33 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.0 | 41.8 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.7 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 241 | 76 | 123 | 376 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 846 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 254 | 80 | 129 | 396 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 304 | 0 | 129 | 396 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 652 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.05 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.20 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.6 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.95 | 2.06 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.2 | 19.8 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.2 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 186 | 0 | 0 | 324 | 69 | 174 | 554 | 326 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.34 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 603 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 196 | 0 | 0 | 341 | 73 | 183 | 583 | 343 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 230 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 196 | 0 | 0 | 396 | 0 | 183 | 583 | 113 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 679 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.67 | | 0.32 | 0.99 | 0.23 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.3 | | 25.1 | 33.4 | 24.3 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.93 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.8 | | 0.9 | 27.7 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.1 | | 19.8 | 54.1 | 47.6 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.1 | | | 46.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 457 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 4 | 215 | 195 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3107 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3107 | | 284 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 476 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 203 |
| RTOR Reduction (vph) | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Lane Group Flow (vph) | 0 | 717 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1119 | | 393 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.64 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.6 | | 12.5 | 10.9 | | | | | 21.8 | 23.4 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.79 | 0.92 |
| Incremental Delay, d2 | | 2.8 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.4 | | 6.9 | 7.6 | | | | | 16.0 | 18.9 | 21.5 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.4 | | | 7.5 | | | 0.0 | | | 20.1 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

1/14/2013

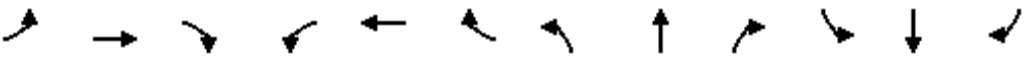
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 401 | 60 | 0 | 0 | 57 | 5 | 569 | 646 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2339 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 413 | 62 | 0 | 0 | 59 | 5 | 587 | 666 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 206 | 269 | 0 | 0 | 60 | 0 | 587 | 666 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1446 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 42.9 | 66.6 | 0.2 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 74.4 | 98.1 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.8 | | | 37.4 | | | 83.8 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.7 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 163 | 284 | 70 | 61 | 189 | 117 | 43 | 1151 | 72 | 100 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2842 | | | 2770 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.66 | | | 0.79 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1916 | | | 2214 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 296 | 73 | 64 | 197 | 122 | 45 | 1199 | 75 | 104 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 64 | 0 | 0 | 0 | 28 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 525 | 0 | 0 | 319 | 0 | 45 | 1199 | 47 | 104 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 877 | | | 729 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.21 | | | 0.14 | | 0.06 | | 0.04 | 0.27 | | 0.01 |
| v/c Ratio | | 0.60 | | | 0.44 | | 0.15 | 0.99 | 0.09 | 0.72 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.9 | | | 22.3 | | 14.7 | 25.6 | 16.5 | 19.2 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.86 | 1.42 | 1.82 | 1.63 | 3.13 |
| Incremental Delay, d2 | | 3.0 | | | 1.9 | | 0.6 | 17.7 | 0.2 | 24.6 | 1.0 | 0.1 |
| Delay (s) | | 21.9 | | | 24.2 | | 20.2 | 39.8 | 23.6 | 59.5 | 31.7 | 50.7 |
| Level of Service | | C | | | C | | C | D | C | E | C | D |
| Approach Delay (s) | | 21.9 | | | 24.2 | | | 38.2 | | | 37.5 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 82.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 441 | 0 | 0 | 339 | 85 | 28 | 63 | 115 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1707 | | | 1668 | | | 1574 | | | | |
| Flt Permitted | | 0.93 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1599 | | | 1668 | | | 1574 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 490 | 0 | 0 | 377 | 94 | 31 | 70 | 128 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 70 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 539 | 0 | 0 | 457 | 0 | 0 | 159 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 836 | | | 872 | | | 557 | | | | |
| v/s Ratio Prot | | | | | 0.27 | | | | | | | |
| v/s Ratio Perm | | c0.34 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.64 | | | 0.52 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 11.2 | | | 10.2 | | | 15.1 | | | | |
| Progression Factor | | 1.00 | | | 0.56 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.8 | | | 2.0 | | | 1.3 | | | | |
| Delay (s) | | 15.0 | | | 7.7 | | | 16.4 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 15.0 | | | 7.7 | | | 16.4 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 45 | 458 | 31 | 23 | 355 | 53 | 16 | 175 | 47 | 68 | 107 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 1889 | | | 1831 | | | 3160 | | | 3149 | |
| Flt Permitted | | 0.93 | | | 0.96 | | | 0.93 | | | 0.79 | |
| Satd. Flow (perm) | | 1773 | | | 1759 | | | 2958 | | | 2534 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 509 | 34 | 26 | 394 | 59 | 18 | 194 | 52 | 76 | 119 | 21 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 8 | 0 | 0 | 30 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 590 | 0 | 0 | 471 | 0 | 0 | 234 | 0 | 0 | 204 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 818 | | | 812 | | | 1229 | | | 1053 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | | | 0.27 | | | 0.08 | | | c0.08 | |
| v/c Ratio | | 0.72 | | | 0.58 | | | 0.19 | | | 0.19 | |
| Uniform Delay, d1 | | 14.1 | | | 12.9 | | | 12.1 | | | 12.1 | |
| Progression Factor | | 0.65 | | | 0.55 | | | 0.94 | | | 0.70 | |
| Incremental Delay, d2 | | 4.5 | | | 2.9 | | | 0.3 | | | 0.4 | |
| Delay (s) | | 13.6 | | | 10.0 | | | 11.7 | | | 8.9 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 13.6 | | | 10.0 | | | 11.7 | | | 8.9 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 80.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 355 | 20 | 29 | 302 | 64 | 46 | 319 | 92 | 60 | 96 | 20 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1502 | 2948 | | 1585 | 2934 | | 1497 | 3031 | | 1594 | 2943 | |
| Flt Permitted | 0.47 | 1.00 | | 0.46 | 1.00 | | 0.67 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 744 | 2948 | | 773 | 2934 | | 1056 | 3031 | | 806 | 2943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 56 | 394 | 22 | 32 | 336 | 71 | 51 | 354 | 102 | 67 | 107 | 22 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 41 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 56 | 410 | 0 | 32 | 379 | 0 | 51 | 415 | 0 | 67 | 119 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 252 | 998 | | 262 | 993 | | 569 | 1632 | | 434 | 1585 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.08 | | | 0.04 | | | 0.05 | | | 0.08 | | |
| v/c Ratio | 0.22 | 0.41 | | 0.12 | 0.38 | | 0.09 | 0.25 | | 0.15 | 0.07 | |
| Uniform Delay, d1 | 15.4 | 16.5 | | 14.8 | 16.3 | | 7.3 | 8.0 | | 7.6 | 7.2 | |
| Progression Factor | 0.63 | 0.62 | | 0.86 | 0.85 | | 0.71 | 0.73 | | 1.34 | 1.35 | |
| Incremental Delay, d2 | 1.6 | 1.0 | | 0.9 | 1.1 | | 0.3 | 0.4 | | 0.8 | 0.1 | |
| Delay (s) | 11.2 | 11.3 | | 13.6 | 15.1 | | 5.5 | 6.2 | | 10.9 | 9.8 | |
| Level of Service | B | B | | B | B | | A | A | | B | A | |
| Approach Delay (s) | 11.3 | | | 15.0 | | | 6.1 | | | 10.2 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 83 | 380 | 131 | 100 | 316 | 82 | 37 | 324 | 60 | 41 | 136 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 2934 | | 1337 | 3524 | | | 3413 | | | 3314 | |
| Flt Permitted | 0.49 | 1.00 | | 0.42 | 1.00 | | | 0.91 | | | 0.84 | |
| Satd. Flow (perm) | 719 | 2934 | | 587 | 3524 | | | 3134 | | | 2805 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 87 | 400 | 138 | 105 | 333 | 86 | 39 | 341 | 63 | 43 | 143 | 40 |
| RTOR Reduction (vph) | 0 | 53 | 0 | 0 | 35 | 0 | 0 | 20 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 87 | 485 | 0 | 105 | 384 | 0 | 0 | 423 | 0 | 0 | 202 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 343 | 1399 | | 280 | 1681 | | | 1254 | | | 1122 | |
| v/s Ratio Prot | 0.17 | | | 0.11 | | | | | | | | |
| v/s Ratio Perm | 0.12 | | | c0.18 | | | | c0.13 | | | 0.07 | |
| v/c Ratio | 0.25 | 0.35 | | 0.38 | 0.23 | | | 0.34 | | | 0.18 | |
| Uniform Delay, d1 | 10.1 | 10.7 | | 10.8 | 10.0 | | | 13.5 | | | 12.6 | |
| Progression Factor | 1.65 | 1.85 | | 0.77 | 0.72 | | | 0.51 | | | 0.64 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 3.3 | 0.3 | | | 0.7 | | | 0.3 | |
| Delay (s) | 18.4 | 20.4 | | 11.6 | 7.4 | | | 7.6 | | | 8.4 | |
| Level of Service | B | C | | B | A | | | A | | | A | |
| Approach Delay (s) | 20.1 | | | 8.3 | | | 7.6 | | | 8.4 | | |
| Approach LOS | C | | | A | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 62.1% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 99 | 307 | 99 | 104 | 371 | 104 | 82 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3036 | | | 1822 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.80 | | | 0.78 | |
| Satd. Flow (perm) | | 1223 | 1409 | | 2327 | | | 1482 | | | 1447 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 341 | 110 | 116 | 412 | 116 | 91 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 29 | 0 | 0 | 30 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 451 | 58 | 0 | 615 | 0 | 0 | 252 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 640 | 737 | | 1217 | | | 479 | | | 467 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.37 | 0.04 | | 0.26 | | | 0.17 | | | c0.18 | |
| v/c Ratio | | 0.70 | 0.08 | | 0.51 | | | 0.53 | | | 0.55 | |
| Uniform Delay, d1 | | 11.7 | 7.7 | | 10.1 | | | 17.9 | | | 18.1 | |
| Progression Factor | | 1.75 | 4.62 | | 0.43 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.2 | 0.2 | | 1.4 | | | 4.1 | | | 4.6 | |
| Delay (s) | | 26.7 | 35.8 | | 5.7 | | | 22.0 | | | 22.6 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 28.5 | | | 5.7 | | | 22.0 | | | 22.6 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 73.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 75 | 386 | 22 | 15 | 450 | 63 | 40 | 103 | 41 | 43 | 90 | 101 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3017 | | 1573 | 3003 | | | 3457 | | | 3397 | |
| Flt Permitted | 0.38 | 1.00 | | 0.46 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 597 | 3017 | | 764 | 3003 | | | 3010 | | | 3010 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 429 | 24 | 17 | 500 | 70 | 44 | 114 | 46 | 48 | 100 | 112 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 62 | 0 |
| Lane Group Flow (vph) | 83 | 447 | 0 | 17 | 553 | 0 | 0 | 179 | 0 | 0 | 198 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 257 | 1300 | | 329 | 1294 | | | 1343 | | | 1343 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.32 | 0.34 | | 0.05 | 0.43 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.4 | | 10.8 | 12.9 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.96 | 0.99 | | 1.14 | 1.00 | | | 1.04 | | | 0.83 | |
| Incremental Delay, d2 | 2.5 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.3 | 12.7 | | 12.4 | 13.3 | | | 11.2 | | | 9.1 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.0 | | | 13.3 | | | 11.2 | | | 9.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 458 | 74 | 94 | 469 | 284 | 51 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3076 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.87 | | | 0.63 | |
| Satd. Flow (perm) | | 2014 | | | 2279 | | | 2748 | | | 2005 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 509 | 82 | 104 | 521 | 316 | 57 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 98 | 0 | 0 | 32 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 671 | 0 | 0 | 843 | 0 | 0 | 496 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 806 | | | 912 | | | 1263 | | | 617 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.37 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.83 | | | 0.92 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.5 | | | 18.6 | | | 12.1 | | | 20.3 | |
| Progression Factor | | 1.73 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 9.7 | | | 16.3 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 40.0 | | | 34.9 | | | 13.0 | | | 26.4 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 40.0 | | | 34.9 | | | 13.0 | | | 26.4 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 88.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 724 | 121 | 45 | 759 | 0 | 142 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2975 | | | 3032 | | | 1585 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2975 | | | 2542 | | | 1308 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 804 | 134 | 50 | 843 | 0 | 158 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 920 | 0 | 0 | 893 | 0 | 0 | 216 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1917 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.17 | | | | | |
| v/c Ratio | 0.48 | | | 0.96 | | | 0.93 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.8 | | | 36.4 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.9 | | | 42.9 | | | | | |
| Delay (s) | 0.8 | | | 62.5 | | | 79.3 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.8 | | | 62.5 | | | 79.3 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 36.4 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.82 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.0% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 187 | 274 | 646 | 183 | 103 | 20 | 185 | 78 | 7 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 508 | 3020 | | 340 | 3257 | 1457 | | 1581 | | 690 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 208 | 304 | 718 | 203 | 114 | 22 | 206 | 87 | 8 | 86 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 74 | 0 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 137 | 724 | 0 | 304 | 718 | 99 | 0 | 268 | 0 | 87 | 8 | 40 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Effective Green, g (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Actuated g/C Ratio | 0.44 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 331 | 1027 | | 380 | 1274 | 709 | | 365 | | 338 | 617 | 677 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.71 | | 0.80 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.8 | | 14.8 | 21.4 | 12.7 | | 32.0 | | 21.2 | 18.5 | 13.3 |
| Progression Factor | 1.90 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.7 | | 12.0 | 1.8 | 0.1 | | 8.0 | | 0.4 | 0.0 | 0.1 |
| Delay (s) | 30.4 | 44.4 | | 26.8 | 23.2 | 12.8 | | 40.0 | | 21.6 | 18.5 | 13.3 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.3 | | | 22.4 | | | 40.0 | | | 17.5 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 74.4% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 517 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 574 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 574 | | | 883 | 1178 | 287 | 891 | 1178 | 295 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 574 | | | 883 | 1178 | 287 | 891 | 1178 | 295 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 |
| cM capacity (veh/h) | 961 | | | 974 | | | 19 | 184 | 701 | 231 | 184 | 692 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 287 | 287 | 274 | 203 | 393 | 36 | 636 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | |
| cSH | 1700 | 1700 | 1700 | 974 | 1700 | 231 | 692 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | |
| Lane LOS | | | | A | | C | E | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 40.6 | | | | | | |
| Approach LOS | | | | | | E | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 12.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 59.7% | ICU Level of Service | | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 549 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 610 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 305 | 305 | 597 | | | |
| Volume Left (vph) | 305 | 305 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 499 | 499 | 618 | | | |
| Control Delay (s) | 18.2 | 18.2 | 49.1 | | | |
| Approach Delay (s) | 18.2 | | 49.1 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 373 | 46 | 130 | 332 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3097 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.43 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3097 | | 706 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 414 | 51 | 144 | 369 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 454 | 0 | 144 | 369 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1312 | | 509 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.15 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.35 | | 0.28 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.5 | | 11.9 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.28 | 0.23 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.3 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.3 | | 4.6 | 2.2 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.3 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | HCM Level of Service | | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 34.9% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 377 | 0 | 0 | 413 | 76 | 49 | 65 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3076 | | | 4377 | | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 640 | 3257 | | | 3076 | | | 4377 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 419 | 0 | 0 | 459 | 84 | 54 | 72 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 419 | 0 | 0 | 525 | 0 | 0 | 147 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 478 | 1839 | | | 1267 | | | 1390 | | | | |
| v/s Ratio Prot | 0.02 | c0.13 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.23 | | | 0.41 | | | 0.11 | | | | |
| Uniform Delay, d1 | 12.3 | 9.2 | | | 17.7 | | | 20.5 | | | | |
| Progression Factor | 0.31 | 0.30 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 4.5 | 3.1 | | | 18.7 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.3 | | | 18.7 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.9% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 357 | 39 | 40 | 256 | 33 | 118 | 85 | 86 | 65 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2986 | | | 2976 | | | 1773 | | | 1752 | |
| Flt Permitted | | 0.89 | | | 0.85 | | | 0.77 | | | 0.86 | |
| Satd. Flow (perm) | | 2673 | | | 2560 | | | 1387 | | | 1526 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 397 | 43 | 44 | 284 | 37 | 131 | 94 | 96 | 72 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 45 | 0 |
| Lane Group Flow (vph) | 0 | 472 | 0 | 0 | 352 | 0 | 0 | 297 | 0 | 0 | 268 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 946 | | | 906 | | | 683 | | | 751 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | | | 0.14 | | | c0.21 | | | 0.18 | |
| v/c Ratio | | 0.50 | | | 0.39 | | | 0.44 | | | 0.36 | |
| Uniform Delay, d1 | | 16.5 | | | 15.7 | | | 10.7 | | | 10.2 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.9 | | | 1.3 | | | 2.0 | | | 1.3 | |
| Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.5 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 65.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 295 | 39 | 59 | 200 | 75 | 71 | 1001 | 104 | 126 | 428 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1551 | 3023 | | 1593 | 3505 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.55 | 1.00 | | 0.49 | 1.00 | | 0.43 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 891 | 3023 | | 819 | 3505 | | 675 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 311 | 41 | 62 | 211 | 79 | 75 | 1054 | 109 | 133 | 451 | 84 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 45 | 0 | 0 | 0 | 65 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 178 | 340 | 0 | 62 | 245 | 0 | 75 | 1054 | 44 | 133 | 451 | 33 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 346 | 996 | | 325 | 1155 | | 324 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.11 | | 0.01 | 0.07 | | 0.01 | c0.35 | | c0.04 | 0.15 | |
| v/s Ratio Perm | c0.16 | | | 0.06 | | | 0.09 | | 0.03 | 0.35 | | 0.03 |
| v/c Ratio | 0.51 | 0.34 | | 0.19 | 0.21 | | 0.23 | 0.89 | 0.08 | 0.92 | 0.39 | 0.07 |
| Uniform Delay, d1 | 20.9 | 21.5 | | 18.6 | 20.5 | | 15.0 | 24.3 | 16.4 | 21.1 | 18.7 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.17 | 0.62 | 0.80 |
| Incremental Delay, d2 | 5.4 | 0.9 | | 1.3 | 0.4 | | 1.7 | 10.5 | 0.3 | 54.0 | 0.9 | 0.2 |
| Delay (s) | 26.3 | 22.5 | | 19.9 | 21.0 | | 16.6 | 34.8 | 16.8 | 99.7 | 12.6 | 13.3 |
| Level of Service | C | C | | B | C | | B | C | B | F | B | B |
| Approach Delay (s) | | 23.8 | | | 20.8 | | | 32.1 | | | 30.0 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 38 | 434 | 18 | 25 | 261 | 21 | 35 | 113 | 68 | 71 | 57 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 |
| Satd. Flow (prot) | | 1935 | 1382 | | 1947 | 1331 | | 1970 | 1452 | | 1933 | 1430 |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.92 | 1.00 | | 0.80 | 1.00 |
| Satd. Flow (perm) | | 1860 | 1382 | | 1848 | 1331 | | 1839 | 1452 | | 1581 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 457 | 19 | 26 | 275 | 22 | 37 | 119 | 72 | 75 | 60 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 42 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 0 | 497 | 9 | 0 | 301 | 10 | 0 | 156 | 30 | 0 | 135 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 858 | 638 | | 853 | 614 | | 764 | 603 | | 657 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.01 | | 0.16 | 0.01 | | 0.08 | 0.02 | | c0.09 | 0.01 |
| v/c Ratio | | 0.58 | 0.01 | | 0.35 | 0.02 | | 0.20 | 0.05 | | 0.21 | 0.03 |
| Uniform Delay, d1 | | 12.9 | 9.5 | | 11.3 | 9.5 | | 12.1 | 11.3 | | 12.1 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.38 | 0.16 | | 1.18 | 1.66 | | 0.99 | 0.83 |
| Incremental Delay, d2 | | 2.8 | 0.0 | | 1.1 | 0.0 | | 0.6 | 0.2 | | 0.7 | 0.1 |
| Delay (s) | | 15.7 | 9.5 | | 5.4 | 1.6 | | 14.9 | 18.9 | | 12.7 | 9.4 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 15.5 | | | 5.1 | | | 16.2 | | | 11.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.40 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 67.3% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 514 | 10 | 17 | 268 | 43 | 13 | 247 | 35 | 81 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3031 | | 1520 | 2977 | | 1520 | 2983 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.43 | 1.00 | | 0.68 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3031 | | 692 | 2977 | | 1091 | 2983 | | 871 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 571 | 11 | 19 | 298 | 48 | 14 | 274 | 39 | 90 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 20 | 0 | 0 | 17 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 580 | 0 | 19 | 326 | 0 | 14 | 296 | 0 | 90 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1492 | | 234 | 1008 | | 453 | 1239 | | 362 | 1206 | |
| v/s Ratio Prot | c0.05 | c0.19 | | | 0.11 | | | 0.10 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.03 | | | 0.01 | | | c0.10 | | |
| v/c Ratio | 0.45 | 0.39 | | 0.08 | 0.32 | | 0.03 | 0.24 | | 0.25 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 10.4 | | 14.6 | 16.0 | | 11.3 | 12.3 | | 12.4 | 11.5 | |
| Progression Factor | 1.07 | 0.60 | | 0.91 | 0.93 | | 0.54 | 0.57 | | 1.11 | 1.08 | |
| Incremental Delay, d2 | 7.8 | 0.7 | | 0.7 | 0.8 | | 0.1 | 0.4 | | 1.6 | 0.1 | |
| Delay (s) | 36.9 | 6.9 | | 14.0 | 15.6 | | 6.2 | 7.4 | | 15.4 | 12.5 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.3 | | | 15.5 | | | 7.4 | | | 13.8 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 45.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 253 | 348 | 242 | 216 | 43 | 109 | 310 | 56 | 25 | 192 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2776 | | 1520 | 2964 | | | 3163 | | | 3190 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.81 | | | 0.88 | |
| Satd. Flow (perm) | 921 | 2776 | | 1520 | 2964 | | | 2578 | | | 2834 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 281 | 387 | 269 | 240 | 48 | 121 | 344 | 62 | 28 | 213 | 28 |
| RTOR Reduction (vph) | 0 | 268 | 0 | 0 | 25 | 0 | 0 | 16 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 41 | 400 | 0 | 269 | 263 | 0 | 0 | 511 | 0 | 0 | 255 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 283 | 854 | | 140 | 1322 | | | 992 | | | 1090 | |
| v/s Ratio Prot | c0.14 | | | c0.18 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.20 | | | 0.09 | | |
| v/c Ratio | 0.14 | 0.47 | | 1.92 | 0.20 | | | 0.52 | | | 0.23 | |
| Uniform Delay, d1 | 16.3 | 18.2 | | 29.5 | 10.9 | | | 15.3 | | | 13.5 | |
| Progression Factor | 0.63 | 0.27 | | 1.32 | 1.10 | | | 1.09 | | | 0.56 | |
| Incremental Delay, d2 | 1.0 | 1.8 | | 433.0 | 0.2 | | | 1.4 | | | 0.5 | |
| Delay (s) | 11.3 | 6.7 | | 472.0 | 12.3 | | | 18.2 | | | 8.1 | |
| Level of Service | B | A | | F | B | | | B | | | A | |
| Approach Delay (s) | 6.9 | | | 234.3 | | | 18.2 | | | 8.1 | | |
| Approach LOS | A | | | F | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 71.4 | HCM Level of Service | | | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 68.2% | ICU Level of Service | | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 298 | 14 | 70 | 466 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1587 | | | 1566 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1451 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 331 | 16 | 78 | 518 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 363 | 0 | 0 | 668 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 935 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.24 | | | 0.46 | | | 0.06 | | | | |
| v/c Ratio | | 0.37 | | | 0.71 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.6 | | | 20.3 | | | | |
| Progression Factor | | 1.89 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 4.6 | | | 0.8 | | | | |
| Delay (s) | | 11.0 | | | 12.3 | | | 21.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 11.0 | | | 12.3 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

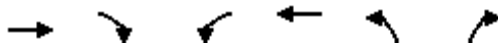


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 94 | 366 | 477 | 44 | 66 | 126 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 99 | 385 | 502 | 46 | 69 | 133 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.85 | | | | 0.85 | 0.85 |
| vC, conflicting volume | 569 | | | | 1134 | 549 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 401 | | | | 1068 | 377 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 62 | 76 |
| cM capacity (veh/h) | 922 | | | | 182 | 557 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 484 | 548 | 69 | 133 | | |
| Volume Left | 99 | 0 | 69 | 0 | | |
| Volume Right | 0 | 46 | 0 | 133 | | |
| cSH | 922 | 1700 | 182 | 557 | | |
| Volume to Capacity | 0.11 | 0.32 | 0.38 | 0.24 | | |
| Queue Length 95th (ft) | 9 | 0 | 42 | 23 | | |
| Control Delay (s) | 2.9 | 0.0 | 36.6 | 13.5 | | |
| Lane LOS | A | | E | B | | |
| Approach Delay (s) | 2.9 | 0.0 | 21.4 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.7 | | | |
| Intersection Capacity Utilization | | | 70.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|-------|------|----------------------|------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 477 | 1 | 27 | 691 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1661 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 530 | 1 | 30 | 768 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 531 | 0 | 0 | 798 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 606 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.48 | | |
| v/c Ratio | 0.45 | | | 1.32 | | |
| Uniform Delay, d1 | 5.8 | | | 27.0 | | |
| Progression Factor | 0.07 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 154.0 | | |
| Delay (s) | 0.5 | | | 181.0 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.5 | | | 181.0 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 108.9 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 0.89 | | | | |
| Actuated Cycle Length (s) | | 85.0 | | Sum of lost time (s) | | 25.0 |
| Intersection Capacity Utilization | | 64.8% | | ICU Level of Service | | C |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 186 | 195 | 25 | 569 | 0 | 0 | 0 | 0 | 3 | 0 | 271 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 207 | 217 | 28 | 632 | 0 | 0 | 0 | 0 | 3 | 0 | 301 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 632 | | | 207 | | | 1003 | 1003 | 212 | 791 | 894 | 632 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 632 | | | 207 | | | 1003 | 1003 | 212 | 791 | 894 | 632 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 28 |
| cM capacity (veh/h) | 960 | | | 983 | | | 55 | 237 | 800 | 278 | 274 | 418 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 138 | 286 | 660 | 3 | 301 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 217 | 0 | 0 | 301 | | | | | | | |
| cSH | 1700 | 1700 | 983 | 278 | 418 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.72 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 140 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 18.1 | 32.8 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 32.7 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 7.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 58.4% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 189 | 0 | 594 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 210 | 0 | 660 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 105 | 105 | 660 | | | |
| Volume Left (vph) | 105 | 105 | 660 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.89 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 33.9 | | | |
| Approach Delay (s) | 10.3 | | 33.9 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 28.2 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 47.1% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 471 | 210 | 159 | 474 | 0 | 0 | 0 | 0 | 132 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 496 | 221 | 167 | 499 | 0 | 0 | 0 | 0 | 139 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 94 |
| Lane Group Flow (vph) | 0 | 496 | 72 | 0 | 666 | 0 | 0 | 0 | 0 | 76 | 246 | 64 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.1 | 39.1 | | 72.6 | | | | | 20.2 | 20.2 | 65.3 |
| Effective Green, g (s) | | 39.1 | 39.1 | | 72.6 | | | | | 20.2 | 20.2 | 65.3 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.45 | | | | | 0.13 | 0.13 | 0.41 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 728 | 294 | | 1530 | | | | | 170 | 466 | 458 |
| v/s Ratio Prot | | c0.17 | | | c0.20 | | | | | 0.06 | c0.07 | |
| v/s Ratio Perm | | | 0.06 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.68 | 0.25 | | 0.44 | | | | | 0.45 | 0.53 | 0.14 |
| Uniform Delay, d1 | | 54.8 | 48.6 | | 29.7 | | | | | 64.7 | 65.4 | 29.7 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.1 | 2.0 | | 0.1 | | | | | 1.9 | 1.1 | 0.1 |
| Delay (s) | | 59.9 | 50.6 | | 0.7 | | | | | 66.6 | 66.5 | 29.9 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 57.0 | | | 0.7 | | | 0.0 | | | 56.5 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 30.1 | | | |
| Intersection Capacity Utilization | | | 53.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 391 | 0 | 0 | 395 | 93 | 238 | 150 | 144 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3001 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3001 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 434 | 0 | 0 | 439 | 103 | 264 | 167 | 160 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 63 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 434 | 0 | 0 | 439 | 21 | 201 | 327 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 79.4 | 79.4 | | | 32.7 | 32.7 | 21.0 | 21.0 | | | | |
| Effective Green, g (s) | 79.4 | 79.4 | | | 32.7 | 32.7 | 21.0 | 21.0 | | | | |
| Actuated g/C Ratio | 0.50 | 0.50 | | | 0.20 | 0.20 | 0.13 | 0.13 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 781 | 1670 | | | 644 | 298 | 201 | 394 | | | | |
| v/s Ratio Prot | c0.15 | 0.13 | | | c0.14 | | c0.13 | 0.11 | | | | |
| v/s Ratio Perm | | | | | | 0.01 | | | | | | |
| v/c Ratio | 0.30 | 0.26 | | | 0.68 | 0.07 | 1.00 | 0.83 | | | | |
| Uniform Delay, d1 | 23.9 | 23.3 | | | 58.8 | 51.4 | 69.5 | 67.8 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 3.0 | 0.1 | 63.5 | 13.8 | | | | |
| Delay (s) | 1.8 | 1.8 | | | 61.8 | 51.5 | 133.0 | 81.6 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.8 | | | 59.9 | | | 99.1 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.1 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 28.9 | | | |
| Intersection Capacity Utilization | | | 50.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 325 | 75 | 44 | 154 | 54 | 88 | 824 | 96 | 93 | 448 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1328 | 1595 | 1713 | | 1525 | 2965 | | 1509 | 2870 | |
| Flt Permitted | 0.49 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.34 | 1.00 | | 0.13 | 1.00 | |
| Satd. Flow (perm) | 791 | 1556 | 1328 | 706 | 1713 | | 539 | 2965 | | 214 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 342 | 79 | 46 | 162 | 57 | 93 | 867 | 101 | 98 | 472 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 14 | 0 | 0 | 10 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 232 | 342 | 27 | 46 | 205 | 0 | 93 | 958 | 0 | 98 | 559 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 368 | 557 | 461 | 269 | 539 | | 275 | 1125 | | 154 | 1089 | |
| v/s Ratio Prot | c0.04 | c0.22 | | 0.01 | 0.12 | | 0.02 | c0.32 | | c0.03 | 0.19 | |
| v/s Ratio Perm | 0.21 | | 0.02 | 0.05 | | | 0.12 | | | 0.23 | | |
| v/c Ratio | 0.63 | 0.61 | 0.06 | 0.17 | 0.38 | | 0.34 | 0.85 | | 0.64 | 0.51 | |
| Uniform Delay, d1 | 21.3 | 23.7 | 19.6 | 20.5 | 24.0 | | 16.6 | 25.6 | | 18.6 | 21.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.5 | 5.0 | 0.2 | 0.3 | 2.0 | | 0.7 | 8.2 | | 8.3 | 1.7 | |
| Delay (s) | 24.8 | 28.7 | 19.8 | 20.8 | 26.0 | | 17.3 | 33.8 | | 26.9 | 23.2 | |
| Level of Service | C | C | B | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 26.3 | | | 25.1 | | | 32.3 | | | 23.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 44 | 389 | 16 | 18 | 212 | 32 | 35 | 80 | 67 | 62 | 44 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1909 | 1482 | | 1599 | 1198 | | 1841 | | | 1814 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.96 | 1.00 | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | | 1831 | 1482 | | 1543 | 1198 | | 1741 | | | 1549 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 46 | 409 | 17 | 19 | 223 | 34 | 37 | 84 | 71 | 65 | 46 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 17 | 0 | 33 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 0 | 455 | 9 | 0 | 242 | 17 | 0 | 159 | 0 | 0 | 132 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 901 | 730 | | 760 | 590 | | 723 | | | 643 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.25 | 0.01 | | 0.16 | 0.01 | | c0.09 | | | 0.08 | |
| v/c Ratio | | 0.50 | 0.01 | | 0.32 | 0.03 | | 0.22 | | | 0.20 | |
| Uniform Delay, d1 | | 11.1 | 8.4 | | 9.9 | 8.5 | | 12.2 | | | 12.1 | |
| Progression Factor | | 1.00 | 1.00 | | 2.04 | 3.33 | | 1.00 | | | 1.42 | |
| Incremental Delay, d2 | | 2.0 | 0.0 | | 1.0 | 0.1 | | 0.7 | | | 0.7 | |
| Delay (s) | | 13.2 | 8.5 | | 21.3 | 28.4 | | 12.9 | | | 17.9 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 13.0 | | | 22.2 | | | 12.9 | | | 17.9 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 64.6% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 75 | 430 | 24 | 19 | 189 | 8 | 41 | 228 | 73 | 18 | 53 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1658 | 1392 | | 1584 | 1497 | | 1755 | 1390 | | 1656 | |
| Flt Permitted | | 0.91 | 1.00 | | 0.82 | 1.00 | | 0.95 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1527 | 1392 | | 1304 | 1497 | | 1677 | 1390 | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 453 | 25 | 20 | 199 | 8 | 43 | 240 | 77 | 19 | 56 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 39 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 532 | 15 | 0 | 219 | 3 | 0 | 283 | 38 | 0 | 91 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 540 | 493 | | 461 | 530 | | 826 | 684 | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.01 | | 0.17 | 0.00 | | c0.17 | 0.03 | | 0.06 | |
| v/c Ratio | | 0.99 | 0.03 | | 0.48 | 0.01 | | 0.34 | 0.06 | | 0.12 | |
| Uniform Delay, d1 | | 20.8 | 13.7 | | 16.3 | 13.6 | | 10.1 | 8.6 | | 8.9 | |
| Progression Factor | | 1.60 | 1.95 | | 0.93 | 0.91 | | 0.34 | 0.33 | | 1.15 | |
| Incremental Delay, d2 | | 33.7 | 0.1 | | 3.4 | 0.0 | | 0.8 | 0.1 | | 0.3 | |
| Delay (s) | | 67.0 | 26.8 | | 18.6 | 12.3 | | 4.2 | 2.9 | | 10.5 | |
| Level of Service | | E | C | | B | B | | A | A | | B | |
| Approach Delay (s) | | 65.2 | | | 18.4 | | | 3.9 | | | 10.5 | |
| Approach LOS | | E | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | | HCM Level of Service | | | | C | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 76.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 444 | 21 | 31 | 9 | 18 | 15 | 26 | 352 | 19 | 8 | 229 | 169 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.98 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1754 | 1390 | | 1758 | | | 1979 | | | 1873 | 1328 |
| Flt Permitted | | 0.73 | 1.00 | | 0.90 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1338 | 1390 | | 1608 | | | 1932 | | | 1852 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 493 | 23 | 34 | 10 | 20 | 17 | 29 | 391 | 21 | 9 | 254 | 188 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 13 | 0 | 0 | 3 | 0 | 0 | 0 | 95 |
| Lane Group Flow (vph) | 0 | 516 | 19 | 0 | 34 | 0 | 0 | 438 | 0 | 0 | 263 | 93 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 607 | 577 | | 421 | | | 951 | | | 912 | 654 |
| v/s Ratio Prot | | c0.10 | | | | | | | | | | |
| v/s Ratio Perm | | 0.25 | 0.01 | | 0.02 | | | c0.23 | | | 0.14 | 0.07 |
| v/c Ratio | | 0.85 | 0.03 | | 0.08 | | | 0.46 | | | 0.29 | 0.14 |
| Uniform Delay, d1 | | 17.2 | 11.3 | | 18.1 | | | 10.8 | | | 9.8 | 9.0 |
| Progression Factor | | 1.05 | 1.65 | | 1.00 | | | 0.57 | | | 0.83 | 1.12 |
| Incremental Delay, d2 | | 7.9 | 0.1 | | 0.4 | | | 1.5 | | | 0.3 | 0.2 |
| Delay (s) | | 26.0 | 18.6 | | 18.5 | | | 7.7 | | | 8.4 | 10.3 |
| Level of Service | | C | B | | B | | | A | | | A | B |
| Approach Delay (s) | | 25.5 | | | 18.5 | | | 7.7 | | | 9.2 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.1 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 79.5% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 889 | 222 | 268 | 1124 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4313 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4313 | | 272 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 936 | 234 | 282 | 1183 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 62 |
| Lane Group Flow (vph) | 0 | 1135 | 0 | 282 | 1183 | 0 | 0 | 0 | 0 | 234 | 391 | 148 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 49.5 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Effective Green, g (s) | | 49.5 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Actuated g/C Ratio | | 0.47 | | 0.66 | 0.66 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2033 | | 371 | 2129 | | | | | 320 | 612 | 306 |
| v/s Ratio Prot | | 0.26 | | c0.11 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.39 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.56 | | 0.76 | 0.56 | | | | | 0.73 | 0.64 | 0.48 |
| Uniform Delay, d1 | | 19.9 | | 12.6 | 9.6 | | | | | 37.7 | 36.8 | 35.3 |
| Progression Factor | | 1.00 | | 1.13 | 1.61 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.1 | | 5.3 | 0.6 | | | | | 8.6 | 2.3 | 1.4 |
| Delay (s) | | 21.0 | | 19.5 | 16.0 | | | | | 46.3 | 39.1 | 36.8 |
| Level of Service | | C | | B | B | | | | | D | D | D |
| Approach Delay (s) | | 21.0 | | | 16.7 | | | 0.0 | | | 40.4 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 101.7% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013






















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 311 | 853 | 0 | 0 | 843 | 234 | 549 | 365 | 422 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4409 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 580 | 3138 | | | 3119 | 1449 | | 4409 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 898 | 0 | 0 | 887 | 246 | 578 | 384 | 444 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 106 | 0 | 78 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 898 | 0 | 0 | 887 | 140 | 0 | 1328 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.5 | 62.5 | | | 45.1 | 45.1 | | 30.5 | | | | |
| Effective Green, g (s) | 62.5 | 62.5 | | | 45.1 | 45.1 | | 30.5 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 599 | 1868 | | | 1340 | 622 | | 1281 | | | | |
| v/s Ratio Prot | 0.06 | c0.29 | | | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.27 | | | | | 0.10 | | 0.30 | | | | |
| v/c Ratio | 0.55 | 0.48 | | | 0.66 | 0.22 | | 1.04 | | | | |
| Uniform Delay, d1 | 12.8 | 12.0 | | | 23.9 | 18.9 | | 37.2 | | | | |
| Progression Factor | 0.68 | 0.82 | | | 0.97 | 1.49 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.7 | | | 1.6 | 0.5 | | 35.1 | | | | |
| Delay (s) | 9.6 | 10.6 | | | 24.8 | 28.7 | | 72.4 | | | | |
| Level of Service | A | B | | | C | C | | E | | | | |
| Approach Delay (s) | | 10.4 | | | 25.7 | | | 72.4 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 38.1 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 101.7% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 105 | 581 | 226 | 78 | 784 | 44 | 226 | 178 | 40 | 49 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1602 | 3232 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 224 | 3061 | 1291 | 709 | 3232 | | 811 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 612 | 238 | 82 | 825 | 46 | 238 | 187 | 42 | 52 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 97 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 111 | 612 | 141 | 82 | 867 | 0 | 238 | 208 | 0 | 52 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.6 | 52.6 | 62.0 | 40.4 | 33.9 | | 29.7 | 20.3 | | 24.1 | 17.5 | |
| Effective Green, g (s) | 62.6 | 52.6 | 62.0 | 40.4 | 33.9 | | 29.7 | 20.3 | | 24.1 | 17.5 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.38 | 0.32 | | 0.28 | 0.19 | | 0.23 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 455 | 1533 | 762 | 328 | 1043 | | 286 | 581 | | 262 | 464 | |
| v/s Ratio Prot | c0.06 | c0.20 | 0.02 | 0.02 | c0.27 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.09 | | 0.09 | 0.08 | | | c0.16 | | | 0.03 | | |
| v/c Ratio | 0.24 | 0.40 | 0.18 | 0.25 | 0.83 | | 0.83 | 0.36 | | 0.20 | 0.29 | |
| Uniform Delay, d1 | 12.1 | 16.3 | 9.9 | 20.9 | 32.9 | | 33.9 | 36.7 | | 32.3 | 38.3 | |
| Progression Factor | 0.91 | 1.01 | 2.01 | 1.00 | 1.00 | | 0.94 | 0.88 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.6 | 0.1 | 0.4 | 7.7 | | 17.7 | 1.3 | | 0.4 | 1.2 | |
| Delay (s) | 11.9 | 17.1 | 19.9 | 21.3 | 40.6 | | 49.5 | 33.8 | | 32.6 | 39.5 | |
| Level of Service | B | B | B | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 17.2 | | | 39.0 | | | 41.8 | | | 38.2 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 228 | 286 | 59 | 190 | 102 | 329 | 382 | 75 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2871 | | 1463 | 3032 | | 1589 | 3245 | | 1549 | 3135 | |
| Flt Permitted | 0.54 | 1.00 | | 0.32 | 1.00 | | 0.46 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 924 | 2871 | | 490 | 3032 | | 772 | 3245 | | 778 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 240 | 301 | 62 | 200 | 107 | 346 | 402 | 79 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 206 | 0 | 0 | 64 | 0 | 0 | 15 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 335 | 0 | 62 | 243 | 0 | 346 | 466 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 362 | 785 | | 233 | 832 | | 530 | 1295 | | 340 | 935 | |
| v/s Ratio Prot | 0.01 | c0.12 | | c0.02 | 0.08 | | c0.11 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.07 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.18 | 0.43 | | 0.27 | 0.29 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 31.4 | | 24.1 | 30.1 | | 16.6 | 22.1 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.02 | 0.90 | |
| Incremental Delay, d2 | 0.3 | 1.7 | | 0.7 | 0.9 | | 3.0 | 0.8 | | 0.5 | 0.9 | |
| Delay (s) | 24.1 | 33.1 | | 24.8 | 30.9 | | 19.6 | 22.9 | | 23.5 | 26.8 | |
| Level of Service | C | C | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 32.1 | | | 29.9 | | | 21.5 | | | 26.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 69.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 169 | 546 | 81 | 6 | 445 | 125 | 68 | 602 | 7 | 144 | 326 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2912 | | | 2885 | | 1436 | 3186 | | 1451 | 2788 | |
| Flt Permitted | | 0.57 | | | 0.94 | | 0.41 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | | 1680 | | | 2727 | | 624 | 3186 | | 421 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 607 | 90 | 7 | 494 | 139 | 76 | 669 | 8 | 160 | 362 | 117 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 39 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 872 | 0 | 0 | 601 | 0 | 76 | 676 | 0 | 160 | 431 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 774 | | | 797 | | 300 | 1078 | | 232 | 944 | |
| v/s Ratio Prot | | c0.07 | | | | | 0.02 | 0.21 | | c0.04 | 0.15 | |
| v/s Ratio Perm | | c0.40 | | | 0.22 | | 0.09 | | | c0.23 | | |
| v/c Ratio | | 1.13 | | | 0.75 | | 0.25 | 0.63 | | 0.69 | 0.46 | |
| Uniform Delay, d1 | | 19.0 | | | 20.9 | | 12.4 | 18.1 | | 14.6 | 16.8 | |
| Progression Factor | | 1.00 | | | 1.54 | | 0.94 | 0.72 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 72.9 | | | 0.6 | | 1.8 | 2.5 | | 15.5 | 1.6 | |
| Delay (s) | | 91.9 | | | 32.7 | | 13.5 | 15.5 | | 30.1 | 18.4 | |
| Level of Service | | F | | | C | | B | B | | C | B | |
| Approach Delay (s) | | 91.9 | | | 32.7 | | | 15.3 | | | 21.3 | |
| Approach LOS | | F | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 81.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 52 | 225 | 48 | 73 | 159 | 13 | 38 | 661 | 93 | 10 | 378 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1898 | | 1615 | 1943 | | 1658 | 3202 | | 1138 | 3197 | |
| Flt Permitted | 0.65 | 1.00 | | 0.52 | 1.00 | | 0.50 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 1132 | 1898 | | 891 | 1943 | | 870 | 3202 | | 359 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 232 | 49 | 75 | 164 | 13 | 39 | 681 | 96 | 10 | 390 | 46 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 4 | 0 | 0 | 17 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 54 | 269 | 0 | 75 | 173 | 0 | 39 | 760 | 0 | 10 | 422 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 418 | 701 | | 329 | 717 | | 415 | 1527 | | 171 | 1525 | |
| v/s Ratio Prot | c0.14 | | | 0.09 | | | c0.24 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.08 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.13 | 0.38 | | 0.23 | 0.24 | | 0.09 | 0.50 | | 0.06 | 0.28 | |
| Uniform Delay, d1 | 13.6 | 15.1 | | 14.1 | 14.2 | | 9.3 | 11.7 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.73 | 1.77 | | 1.00 | 1.00 | | 0.48 | 0.48 | |
| Incremental Delay, d2 | 0.6 | 1.6 | | 0.7 | 0.3 | | 0.4 | 1.2 | | 0.5 | 0.4 | |
| Delay (s) | 14.2 | 16.7 | | 25.1 | 25.4 | | 9.8 | 12.8 | | 4.9 | 5.3 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 16.3 | | | 25.3 | | | 12.7 | | | 5.3 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 62.6% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|-----------------------------------|--------|------|-------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 631 | 194 | 621 | 17 | 3 | 14 | 3 | 47 | 22 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.97 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | | 2955 | | | | 1732 | | | 1897 | | |
| Flt Permitted | 1.00 | | 0.57 | | | | 0.94 | | | 0.81 | | |
| Satd. Flow (perm) | 2956 | | 1698 | | | | 1646 | | | 1603 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 664 | 204 | 654 | 18 | 3 | 15 | 3 | 49 | 23 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 664 | 0 | 874 | 0 | 0 | 0 | 32 | 0 | 0 | 26 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | Perm | | | Perm | | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 821 | | | | 355 | | | 345 | | |
| v/s Ratio Prot | 0.22 | | c0.10 | | | | | | | | | |
| v/s Ratio Perm | | | c0.34 | | | | c0.02 | | | 0.02 | | |
| v/c Ratio | 0.81 | | 1.06 | | | | 0.09 | | | 0.07 | | |
| Uniform Delay, d1 | 21.9 | | 19.0 | | | | 20.4 | | | 20.3 | | |
| Progression Factor | 1.28 | | 0.75 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 0.8 | | 48.8 | | | | 0.5 | | | 0.4 | | |
| Delay (s) | 28.9 | | 63.1 | | | | 20.9 | | | 20.8 | | |
| Level of Service | C | | E | | | | C | | | C | | |
| Approach Delay (s) | 28.9 | | 63.1 | | | | 20.9 | | | 20.8 | | |
| Approach LOS | C | | E | | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 99.0 | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | | 0.91 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 14.0 | | |
| Intersection Capacity Utilization | | | 94.8% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 344 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 362 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 363 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.25 | |
| v/s Ratio Perm | | |
| v/c Ratio | 1.65 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 0.89 | |
| Incremental Delay, d2 | 310.9 | |
| Delay (s) | 335.3 | |
| Level of Service | F | |
| Approach Delay (s) | 335.3 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 194 | 917 | 678 | 81 | 101 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3229 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.63 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2062 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 216 | 1019 | 753 | 90 | 112 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1235 | 829 | 0 | 112 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1269 | 1972 | | 426 | 381 |
| v/s Ratio Prot | | | 0.26 | | c0.07 | |
| v/s Ratio Perm | | c0.60 | | | | 0.03 |
| v/c Ratio | | 0.97 | 0.42 | | 0.26 | 0.12 |
| Uniform Delay, d1 | | 12.0 | 6.5 | | 19.0 | 18.3 |
| Progression Factor | | 1.43 | 1.29 | | 0.93 | 0.91 |
| Incremental Delay, d2 | | 10.2 | 0.6 | | 1.5 | 0.6 |
| Delay (s) | | 27.3 | 8.9 | | 19.1 | 17.3 |
| Level of Service | | C | A | | B | B |
| Approach Delay (s) | | 27.3 | 8.9 | | 18.0 | |
| Approach LOS | | C | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.76 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 71.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 53 | 938 | 697 | 217 | 174 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2912 | | 1464 | 1373 |
| Flt Permitted | | 0.86 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2514 | 2912 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 987 | 734 | 228 | 183 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 0 | 1043 | 917 | 0 | 183 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1470 | 1702 | | 428 | 401 |
| v/s Ratio Prot | | | 0.31 | | 0.12 | |
| v/s Ratio Perm | | 0.41 | | | | 0.01 |
| v/c Ratio | | 0.71 | 0.54 | | 0.43 | 0.04 |
| Uniform Delay, d1 | | 9.6 | 8.2 | | 18.6 | 16.5 |
| Progression Factor | | 0.87 | 0.61 | | 1.01 | 1.47 |
| Incremental Delay, d2 | | 1.2 | 0.7 | | 3.0 | 0.2 |
| Delay (s) | | 9.6 | 5.7 | | 21.9 | 24.5 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 9.6 | 5.7 | | 22.5 | |
| Approach LOS | | A | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 9.3 | | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | 0.62 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 76.8% | | ICU Level of Service | | D |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 964 | 160 | 167 | 672 | 423 | 323 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.98 | | 1.00 | 1.00 | 0.94 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2239 | | 1770 | 2436 | 1763 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2239 | | 240 | 2436 | 1763 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 984 | 163 | 170 | 686 | 432 | 330 |
| RTOR Reduction (vph) | 9 | 0 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 1138 | 0 | 170 | 686 | 720 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1068 | | 114 | 1162 | 651 | |
| v/s Ratio Prot | 0.51 | | | 0.28 | c0.41 | |
| v/s Ratio Perm | | | c0.71 | | | |
| v/c Ratio | 1.07 | | 1.49 | 0.59 | 1.11 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 12.4 | 20.5 | |
| Progression Factor | 1.48 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 43.2 | | 261.6 | 2.2 | 67.8 | |
| Delay (s) | 68.4 | | 278.6 | 14.6 | 88.3 | |
| Level of Service | E | | F | B | F | |
| Approach Delay (s) | 68.4 | | | 67.0 | 88.3 | |
| Approach LOS | E | | | E | F | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 73.4 | | HCM Level of Service | E |
| HCM Volume to Capacity ratio | | | 1.32 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 118.2% | | ICU Level of Service | H |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 725 | 89 | 258 | 1167 | 9 | 72 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.21 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.70 | |
| Satd. Flow (perm) | 422 | 3213 | 1422 | 448 | 3138 | 1366 | | 1309 | 1443 | | 719 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 806 | 99 | 287 | 1297 | 10 | 80 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 0 | 2 | 0 | 0 | 182 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 806 | 53 | 287 | 1297 | 8 | 0 | 80 | 26 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 45.6 | 45.6 | 45.6 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Effective Green, g (s) | 45.6 | 45.6 | 45.6 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.54 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 226 | 1724 | 763 | 589 | 2451 | 1067 | | 163 | 180 | | 90 | |
| v/s Ratio Prot | | 0.25 | | 0.10 | c0.41 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.28 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.47 | 0.07 | 0.49 | 0.53 | 0.01 | | 0.49 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.2 | 12.2 | 9.5 | 3.9 | 3.5 | 2.0 | | 34.7 | 33.2 | | 32.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.9 | 0.2 | 0.6 | 0.2 | 0.0 | | 2.3 | 0.4 | | 0.0 | |
| Delay (s) | 9.2 | 13.1 | 9.7 | 4.6 | 3.7 | 2.1 | | 37.0 | 33.5 | | 32.7 | |
| Level of Service | A | B | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 12.7 | | | 3.8 | | | 34.5 | | | 32.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.9 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 52.4% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 820 | 856 | 45 | 24 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1482 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2834 | 3017 | | 1482 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 911 | 951 | 50 | 27 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 925 | 997 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1039 | 2145 | | 115 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.8 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.4 | 0.2 | | 4.9 | |
| Delay (s) | | 38.2 | 0.2 | | 44.0 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 38.2 | 0.2 | | 44.0 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 44.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 88 | 435 | 1 | 27 | 584 | 80 | 0 | 0 | 1 | 45 | 3 | 128 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1727 | | | 3232 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.77 | | | 0.93 | | | 1.00 | | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1333 | | | 3022 | | | 1432 | | | 1569 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 98 | 483 | 1 | 30 | 649 | 89 | 0 | 0 | 1 | 50 | 3 | 142 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 95 |
| Lane Group Flow (vph) | 0 | 582 | 0 | 0 | 756 | 0 | 0 | 0 | 0 | 0 | 53 | 47 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 486 | | | 1634 | | | 152 | | | 469 | 422 |
| v/s Ratio Prot | | | | | c0.08 | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | c0.44 | | | 0.17 | | | | | | 0.01 | c0.04 |
| v/c Ratio | | 1.20 | | | 0.46 | | | 0.00 | | | 0.11 | 0.11 |
| Uniform Delay, d1 | | 27.0 | | | 12.5 | | | 34.0 | | | 21.9 | 19.8 |
| Progression Factor | | 1.00 | | | 1.88 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 107.5 | | | 0.1 | | | 0.0 | | | 0.5 | 0.5 |
| Delay (s) | | 134.5 | | | 23.5 | | | 34.0 | | | 22.4 | 20.4 |
| Level of Service | | F | | | C | | | C | | | C | C |
| Approach Delay (s) | | 134.5 | | | 23.5 | | | 34.0 | | | 20.9 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 64.9 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 73.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 29 | 48 | 23 | 24 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.94 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1808 | | | 1703 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1636 | | | 1627 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 31 | 51 | 24 | 25 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 87 | 0 | 0 | 120 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 579 | | | 576 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.05 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.3 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.69 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.5 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.1 | 19.1 | | | 14.9 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.7 | | | 14.9 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 56 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 59 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 33 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.11 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.4 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.32 | 0.75 | 1.68 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.5 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.5 | | 5.0 | 12.1 | 22.9 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | C | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.6 | | | 0.0 | | | 55.2 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 340 | 815 | 220 | 54 | 593 | 287 | 102 | 251 | 55 | 54 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 624 | 302 | 107 | 264 | 58 | 57 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 0 | 228 | 0 | 0 | 41 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1071 | 0 | 57 | 624 | 74 | 0 | 371 | 17 | 57 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.32 | 0.50 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1036 | 1631 | | 105 | 772 | 251 | | 736 | 304 | 66 | | 57 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.20 | | | c0.11 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.35 | 0.66 | | 0.54 | 0.81 | 0.30 | | 0.50 | 0.06 | 0.86 | | 0.04 |
| Uniform Delay, d1 | 34.2 | 24.2 | | 59.2 | 46.1 | 39.8 | | 44.2 | 39.7 | 59.3 | | 55.6 |
| Progression Factor | 0.94 | 0.18 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.6 | 1.3 | | 18.7 | 8.9 | 3.0 | | 2.5 | 0.3 | 65.1 | | 0.3 |
| Delay (s) | 32.7 | 5.7 | | 77.9 | 55.0 | 42.8 | | 44.3 | 39.7 | 124.4 | | 55.9 |
| Level of Service | C | A | | E | E | D | | D | D | F | | E |
| Approach Delay (s) | | 12.4 | | | 52.6 | | | 43.7 | | | 99.8 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue

1/14/2013




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|-------|------|----------------------|--------|------|--------|------|------|------|
| Lane Configurations | | ↑↑ | | ↔ | ↑↑ | | ↔ | | ↔ | ↔ | ↔ | |
| Volume (vph) | 0 | 893 | 181 | 105 | 839 | 0 | 89 | 0 | 103 | 9 | 18 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.96 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2987 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1870 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2987 | | 291 | 3149 | | 1079 | | 1451 | 1803 | 1870 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 201 | 117 | 932 | 0 | 99 | 0 | 114 | 10 | 20 | 8 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1176 | 0 | 117 | 932 | 0 | 99 | 0 | 37 | 10 | 23 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1792 | | 175 | 1889 | | 345 | | 464 | | 577 | 598 |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | c0.40 | | | c0.09 | | 0.03 | | 0.01 | |
| v/c Ratio | | 0.66 | | 0.67 | 0.49 | | 0.29 | | 0.08 | | 0.02 | 0.04 |
| Uniform Delay, d1 | | 13.2 | | 13.4 | 11.4 | | 25.5 | | 23.7 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.9 | | 18.5 | 0.9 | | 2.1 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 15.1 | | 31.8 | 12.3 | | 27.5 | | 24.1 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 15.1 | | | 14.5 | | | 25.7 | | | | 23.5 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|--------|-------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↱↱↱ | | | ↱↱↱ | |
| Volume (vph) | 0 | 0 | 0 | 300 | 0 | 1230 | 211 | 670 | 0 | 0 | 789 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 306 | 0 | 1255 | 215 | 684 | 0 | 0 | 805 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 306 | 0 | 1255 | 215 | 684 | 0 | 0 | 1305 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.46 | 0.25 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.5 | | 37.5 | 29.5 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.09 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.7 | | 848.6 | 2.7 | 0.2 | | | 34.8 | |
| Delay (s) | | | | 40.3 | | 886.1 | 21.5 | 18.2 | | | 71.8 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 720.3 | | | 19.0 | | | 71.8 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 328.1 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 101.8% | | | ICU Level of Service | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 145 | 0 | 0 | 0 | 0 | 559 | 408 | 359 | 730 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 149 | 0 | 0 | 0 | 0 | 576 | 421 | 370 | 753 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 962 | 0 | 0 | 0 | 0 | 0 | 576 | 421 | 370 | 753 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.13 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.49 | 0.70 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.5 | | | | | | 32.5 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.2 | | | | | | 1.3 | 6.1 | 4.9 | 0.1 | |
| Delay (s) | 35.5 | 51.7 | | | | | | 38.4 | 45.6 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 47.9 | | | 0.0 | | | 41.4 | | | 12.9 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 101.8% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013










| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|-------|------|------|-------|------|-------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 158 | 0 | 0 | 147 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 979 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 176 | 0 | 0 | 163 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 176 | 0 | 0 | 168 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | | 7 | 2 | | 6 | |
| Permitted Phases | | | | 8 | | | | 2 | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | | 0.59 | 0.59 | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | | 4.0 | 4.0 | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | | 636 | 1086 | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | | 0.00 | c0.10 | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | | 0.01 | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | | 0.02 | 0.16 | | 0.16 | |
| Uniform Delay, d1 | | | | 24.5 | 20.0 | | | 10.5 | 8.0 | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | | 1.04 | 1.18 | | 1.00 | |
| Incremental Delay, d2 | | | | 4.9 | 0.1 | | | 0.1 | 0.3 | | 0.3 | |
| Delay (s) | | | | 29.4 | 20.1 | | | 11.0 | 9.7 | | 10.1 | |
| Level of Service | | | | C | C | | | B | A | | B | |
| Approach Delay (s) | | 0.0 | | | 28.0 | | | 9.8 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.2 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 37.0% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|------|------|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 143 | 41 | 46 | 391 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1720 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1720 | | 1004 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 151 | 43 | 48 | 412 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 182 | 0 | 48 | 412 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | | | | pm+pt | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 809 | | 639 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.11 | | 0.01 | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.22 | | 0.08 | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.3 | | 8.6 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.97 | 0.86 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.0 | | 8.5 | 8.9 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 14.0 | | | 8.8 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 41.7% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 48 | 43 | 16 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1751 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1751 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 48 | 18 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 69 | 0 | 18 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.02 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.56 | 0.66 | 1.40 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.8 | 5.4 | 12.4 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 5.2 | 12.4 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.5 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.1% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 161 | 4 | 0 | 301 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1677 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.45 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 809 | 1677 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 179 | 4 | 0 | 334 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 182 | 0 | 0 | 334 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 589 | 1006 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.11 | | | 0.19 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.49 | 0.18 | | | 0.43 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 14.4 | 7.6 | | | 16.1 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.9 | 0.4 | | | 1.7 | 0.0 |
| Delay (s) | | | | | 23.1 | | 17.2 | 8.0 | | | 17.8 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.7 | | | 17.6 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 217 | 30 | 59 | 704 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3290 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3290 | | 1048 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 241 | 33 | 66 | 782 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 260 | 0 | 66 | 825 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1491 | | 634 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.2 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.3 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.3 | | 8.6 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.6 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 285 | 24 | 159 | 591 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3174 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 598 | 3174 | | 996 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 300 | 25 | 167 | 622 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 317 | 0 | 167 | 667 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 558 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.18 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.1 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.6 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 261 | 589 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 290 | 654 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 171 | 193 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.8 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.31 | 0.34 | 0.71 | 0.49 | |
| Capacity (veh/h) | 589 | 528 | 546 | 601 | 620 | |
| Control Delay (s) | 12.7 | 11.3 | 11.4 | 21.0 | 12.8 | |
| Approach Delay (s) | 12.7 | 11.3 | | 17.6 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 54.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 373 | 18 | 20 | 393 | 70 | 78 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3251 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 936 | 1731 | 1421 | | | 257 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 414 | 20 | 22 | 437 | 78 | 87 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 38 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 414 | 8 | 22 | 437 | 127 | 0 | 0 | 137 | 422 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 223 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.25 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.09 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.57 | 0.01 | 0.10 | 1.06 | 0.38 | | | 1.99 | 0.49 | |
| Uniform Delay, d1 | | 21.6 | 23.3 | 17.8 | 31.2 | 40.0 | 33.5 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.3 | 0.0 | 0.9 | 61.3 | 3.2 | | | 491.0 | 2.0 | |
| Delay (s) | | 23.5 | 26.5 | 17.9 | 32.1 | 101.3 | 36.6 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.8 | | | 81.8 | | | | | 154.2 | |
| Approach LOS | | | C | | | F | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 146.1 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 103.0% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 107 | 571 | 82 | 103 | 4 | 113 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.37 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 670 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 634 | 91 | 114 | 4 | 126 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 119 | 827 | 0 | 0 | 0 | 130 | 867 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 175 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.08 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.33 | |
| v/c Ratio | 0.68 | 0.97 | | | | 0.39 | 1.69 | |
| Uniform Delay, d1 | 34.8 | 38.4 | | | | 36.8 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 19.3 | 25.0 | | | | 3.4 | 317.6 | |
| Delay (s) | 54.1 | 63.4 | | | | 40.2 | 359.9 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 62.2 | | | | 319.3 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 596 | 0 | 0 | 469 | 56 | 85 | 52 | 19 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1952 | | | 1841 | | | | |
| Flt Permitted | | 0.91 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1530 | | | 1952 | | | 1841 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 662 | 0 | 0 | 521 | 62 | 94 | 58 | 21 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 734 | 0 | 0 | 583 | 0 | 0 | 173 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 942 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.48 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.78 | | | 0.49 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.2 | | | 6.9 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.3 | | | 1.4 | | | 2.1 | | | | |
| Delay (s) | | 15.6 | | | 8.3 | | | 21.7 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 15.6 | | | 8.3 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 334 | 152 | 129 | 331 | 135 | 105 | 639 | 86 | 140 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1982 | 1434 | | 1945 | 1444 | 1546 | 3040 | 1296 | 1506 | 3069 | 1252 |
| Flt Permitted | | 0.36 | 1.00 | | 0.70 | 1.00 | 0.23 | 1.00 | 1.00 | 0.29 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 714 | 1434 | | 1380 | 1444 | 373 | 3040 | 1296 | 455 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 352 | 160 | 136 | 348 | 142 | 111 | 673 | 91 | 147 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 94 | 0 | 0 | 101 | 0 | 0 | 54 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 427 | 66 | 0 | 484 | 41 | 111 | 673 | 37 | 147 | 799 | 50 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 413 | 587 | | 394 | 413 | 272 | 1225 | 522 | 310 | 1248 | 509 |
| v/s Ratio Prot | | c0.10 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.32 | 0.05 | | c0.35 | 0.03 | 0.16 | | 0.03 | 0.19 | | 0.04 |
| v/c Ratio | | 1.03 | 0.11 | | 1.23 | 0.10 | 0.41 | 0.55 | 0.07 | 0.47 | 0.64 | 0.10 |
| Uniform Delay, d1 | | 31.0 | 19.2 | | 37.5 | 27.6 | 16.4 | 24.0 | 19.3 | 16.0 | 25.0 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.74 | 1.54 | 2.62 |
| Incremental Delay, d2 | | 53.3 | 0.4 | | 123.3 | 0.5 | 1.0 | 1.8 | 0.3 | 1.1 | 2.4 | 0.4 |
| Delay (s) | | 84.3 | 19.6 | | 160.8 | 28.0 | 17.4 | 25.8 | 19.5 | 29.0 | 41.0 | 50.9 |
| Level of Service | | F | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 66.7 | | | 130.7 | | | 24.1 | | | 40.3 | |
| Approach LOS | | E | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.8 | | | | HCM Level of Service | | | E | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 90.2% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 412 | 85 | 105 | 490 | 94 | 51 | 61 | 72 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1644 | | | 1646 | | | 1796 | | | | |
| Flt Permitted | | 0.83 | | | 0.84 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1375 | | | 1390 | | | 1796 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 458 | 94 | 117 | 544 | 104 | 57 | 68 | 80 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 636 | 0 | 0 | 756 | 0 | 0 | 170 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 846 | | | 855 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.46 | | | 0.54 | | | 0.09 | | | | |
| v/c Ratio | | 0.75 | | | 0.88 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.0 | | | 10.5 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.1 | | | 12.9 | | | 2.1 | | | | |
| Delay (s) | | 15.1 | | | 23.5 | | | 21.7 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 15.1 | | | 23.5 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 19.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.73 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 71.1% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰↱ | |
| Volume (vph) | 21 | 455 | 73 | 84 | 568 | 45 | 37 | 76 | 74 | 56 | 238 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1686 | 1455 | | 1886 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.88 | 1.00 | | 0.83 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1630 | 1382 | | 1519 | 1417 | | 1430 | 1455 | | 1775 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 479 | 77 | 88 | 598 | 47 | 39 | 80 | 78 | 59 | 251 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 33 | 0 | 0 | 13 | 0 | 0 | 53 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 501 | 44 | 0 | 686 | 34 | 0 | 119 | 25 | 0 | 352 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 935 | 792 | | 871 | 812 | | 458 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.31 | 0.03 | | 0.45 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.54 | 0.06 | | 0.79 | 0.04 | | 0.26 | 0.05 | | 0.62 | |
| Uniform Delay, d1 | | 9.9 | 7.1 | | 12.4 | 7.0 | | 18.9 | 17.6 | | 21.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.2 | 0.1 | | 7.1 | 0.1 | | 1.4 | 0.2 | | 5.0 | |
| Delay (s) | | 12.1 | 7.2 | | 19.6 | 7.1 | | 20.3 | 17.9 | | 26.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 11.4 | | | 18.8 | | | 19.3 | | | 26.6 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.73 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 99.6% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 57 | 463 | 30 | 53 | 598 | 58 | 44 | 165 | 57 | 124 | 210 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1537 | 3068 | | 1652 | 3732 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.31 | 1.00 | | 0.41 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 505 | 3068 | | 716 | 3732 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 63 | 514 | 33 | 59 | 664 | 64 | 49 | 183 | 63 | 138 | 233 | 36 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 11 | 0 | 0 | 0 | 38 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 63 | 540 | 0 | 59 | 717 | 0 | 49 | 183 | 25 | 138 | 233 | 14 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 241 | 1463 | | 341 | 1780 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | 0.18 | | | c0.19 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.08 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.26 | 0.37 | | 0.17 | 0.40 | | 0.13 | 0.28 | 0.05 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.2 | 10.8 | | 9.7 | 11.0 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.82 | 0.89 | 0.71 | 0.58 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.6 | 0.7 | | 1.1 | 0.7 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.8 | 11.5 | | 10.8 | 11.7 | | 10.9 | 12.7 | 8.6 | 9.9 | 9.3 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.6 | | | 11.6 | | | 11.5 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 73 | 389 | 71 | 73 | 387 | 77 | 55 | 197 | 64 | 135 | 272 | 162 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3142 | | 1515 | 3108 | | 1583 | 2928 | | 1453 | 2920 | |
| Flt Permitted | 0.44 | 1.00 | | 0.44 | 1.00 | | 0.44 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 617 | 3142 | | 708 | 3108 | | 741 | 2928 | | 892 | 2920 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 77 | 409 | 75 | 77 | 407 | 81 | 58 | 207 | 67 | 142 | 286 | 171 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 100 | 0 |
| Lane Group Flow (vph) | 77 | 484 | 0 | 77 | 488 | 0 | 58 | 235 | 0 | 142 | 357 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 296 | 1508 | | 340 | 1492 | | 306 | 1210 | | 369 | 1207 | |
| v/s Ratio Prot | | 0.15 | | | c0.16 | | | 0.08 | | | 0.12 | |
| v/s Ratio Perm | 0.12 | | | 0.11 | | | 0.08 | | | c0.16 | | |
| v/c Ratio | 0.26 | 0.32 | | 0.23 | 0.33 | | 0.19 | 0.19 | | 0.38 | 0.30 | |
| Uniform Delay, d1 | 11.6 | 12.0 | | 11.4 | 12.0 | | 14.0 | 14.0 | | 15.3 | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.1 | 0.6 | | 1.5 | 0.6 | | 1.4 | 0.4 | | 3.0 | 0.6 | |
| Delay (s) | 13.7 | 12.5 | | 12.9 | 12.6 | | 15.4 | 14.4 | | 18.4 | 15.3 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 12.7 | | | 12.7 | | | 14.6 | | | 16.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 53.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 108 | 453 | 62 | 32 | 523 | 48 | 86 | 203 | 60 | 76 | 473 | 111 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1653 | | 1371 | 1973 | | 1534 | 2998 | | 1535 | 3011 | |
| Flt Permitted | 0.24 | 1.00 | | 0.30 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 402 | 1653 | | 427 | 1973 | | 450 | 2998 | | 939 | 3011 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 114 | 477 | 65 | 34 | 551 | 51 | 91 | 214 | 63 | 80 | 498 | 117 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 114 | 542 | 0 | 34 | 602 | 0 | 91 | 277 | 0 | 80 | 615 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 272 | 725 | | 238 | 829 | | 204 | 698 | | 329 | 701 | |
| v/s Ratio Prot | c0.02 | c0.33 | | 0.01 | 0.31 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.19 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.42 | 0.75 | | 0.14 | 0.73 | | 0.45 | 0.40 | | 0.24 | 0.88 | |
| Uniform Delay, d1 | 24.1 | 19.9 | | 20.7 | 20.6 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 6.9 | | 0.3 | 5.5 | | 1.6 | 1.7 | | 0.4 | 14.5 | |
| Delay (s) | 25.2 | 26.8 | | 21.0 | 26.1 | | 30.8 | 29.2 | | 22.2 | 46.0 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 26.6 | | | 25.8 | | | 29.6 | | | 43.2 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 80.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 85 | 389 | 65 | 117 | 509 | 118 | 67 | 158 | 58 | 127 | 367 | 83 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3680 | | | 3131 | | 1652 | 3237 | | 1549 | 3026 | |
| Flt Permitted | | 0.68 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2535 | | | 2275 | | 736 | 3237 | | 983 | 3026 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 432 | 72 | 130 | 566 | 131 | 74 | 176 | 64 | 141 | 408 | 92 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 598 | 0 | 0 | 827 | 0 | 74 | 240 | 0 | 141 | 500 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1149 | | | 1031 | | 324 | 1424 | | 433 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.17 | |
| v/s Ratio Perm | | 0.24 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.52 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.38 | |
| Uniform Delay, d1 | | 14.7 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.7 | | | 6.6 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 16.4 | | | 24.2 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 16.4 | | | 24.2 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 875 | 6 | 20 | 584 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 648 | 3206 | | 433 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 972 | 7 | 22 | 649 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 979 | 0 | 22 | 649 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 406 | 2008 | | 271 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | c0.31 | | | 0.20 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.8 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.2 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | 8.2 | | | 6.6 | | | | 20.0 | | | 24.0 | |
| Approach LOS | A | | | A | | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.46 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 73.6 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 125 | 94 | 163 | 57 | 148 | 907 | 90 | 129 | 825 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1584 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.20 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 740 | 1504 | | 337 | 1584 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 132 | 99 | 172 | 60 | 156 | 955 | 95 | 136 | 868 | 105 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 138 | 349 | 0 | 99 | 217 | 0 | 156 | 955 | 55 | 136 | 868 | 56 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 284 | 389 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.05 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.27 | | 0.04 | 0.26 | | 0.04 |
| v/c Ratio | 0.49 | 0.90 | | 0.52 | 0.53 | | 0.67 | 0.76 | 0.10 | 0.64 | 0.68 | 0.10 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.1 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.82 | 0.55 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.9 | | 9.9 | 4.8 | | 13.2 | 3.8 | 0.3 | 13.8 | 2.9 | 0.4 |
| Delay (s) | 28.5 | 56.3 | | 32.7 | 31.9 | | 23.0 | 21.2 | 8.7 | 28.8 | 23.4 | 15.7 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.8 | | | 32.1 | | | 20.5 | | | 23.3 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 74.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 22 | 181 | 38 | 20 | 173 | 22 | 43 | 149 | 40 | 45 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1835 | | | 1848 | | | 1937 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1781 | | | 1790 | | | 1755 | | | 1869 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 39 | 21 | 178 | 23 | 44 | 154 | 41 | 46 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 11 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 238 | 0 | 0 | 216 | 0 | 0 | 228 | 0 | 0 | 352 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 810 | | | 863 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.13 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.28 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.8 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.74 | | | 1.28 | | | 1.00 | |
| Incremental Delay, d2 | | 1.2 | | | 1.0 | | | 0.8 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 10.3 | | | 14.6 | | | 13.0 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 10.3 | | | 14.6 | | | 13.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 49.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 39 | 25 | 180 | 20 | 53 | 200 | 31 | 47 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3057 | | 1577 | 3116 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 965 | 3057 | | 984 | 3116 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 43 | 28 | 200 | 22 | 59 | 222 | 34 | 52 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 59 | 242 | 0 | 52 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 911 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.11 | 0.13 | | 0.09 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.96 | | 0.75 | 0.75 | | 1.40 | 1.44 | | 0.39 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.3 | 17.6 | | 13.2 | 13.6 | | 8.8 | 8.9 | | 2.7 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.5 | | | 13.5 | | | 8.9 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 42 | 25 | 159 | 38 | 27 | 262 | 16 | 42 | 337 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2937 | | | 1923 | | | 1939 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3056 | | 973 | 2937 | | | 1825 | | | 1832 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 47 | 28 | 177 | 42 | 30 | 291 | 18 | 47 | 374 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 206 | 0 | 28 | 194 | 0 | 0 | 336 | 0 | 0 | 453 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1222 | | 389 | 1175 | | | 870 | | | 874 | |
| v/s Ratio Prot | 0.07 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.18 | | | c0.25 | | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.39 | | | 0.52 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.9 | | | 11.8 | |
| Progression Factor | 1.04 | 0.98 | | 0.78 | 0.76 | | | 1.08 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.2 | |
| Delay (s) | 14.1 | 12.6 | | 9.7 | 9.8 | | | 12.9 | | | 14.0 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 13.0 | | | 9.8 | | | 12.9 | | | 14.0 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.7 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 30 | 20 | 161 | 27 | 45 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1966 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.89 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1966 | | 1082 | 1975 | | | 1774 | | | 1911 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 33 | 22 | 179 | 30 | 50 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 156 | 0 | 22 | 209 | 0 | 0 | 323 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 605 | | 333 | 608 | | | 1010 | | | 1088 | |
| v/s Ratio Prot | 0.08 | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.26 | | 0.07 | 0.34 | | | 0.32 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.4 | | | 8.2 | |
| Progression Factor | 0.84 | 0.81 | | 0.93 | 0.93 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 15.0 | 14.8 | | 15.1 | 17.8 | | | 8.1 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 14.8 | | | 17.5 | | | 8.1 | | | 9.6 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 11.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.42 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.1% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.38 | 2.73 | | 1.00 | 1.00 | | 0.82 | 0.77 | 0.97 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.5 | 47.9 | | 17.1 | 17.1 | | 5.5 | 5.3 | 5.0 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.5 | | | 17.1 | | | 5.3 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 253 | 163 | 170 | 204 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 179 | 215 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 179 | 215 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.10 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.32 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.4 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.18 | 2.12 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.3 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 30.5 | 23.6 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 26.7 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 297 | 113 | 77 | 539 | 231 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 645 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 313 | 119 | 81 | 567 | 243 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 167 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 393 | 0 | 81 | 567 | 76 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 706 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.54 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.2 | 8.0 | | | 32.8 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 2.9 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 4.9 | 3.6 | | | 35.7 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 35.7 | | | 73.2 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 512 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 11 | 434 | 277 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3098 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3098 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 533 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 289 |
| RTOR Reduction (vph) | 0 | 170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Lane Group Flow (vph) | 0 | 862 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 98 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.06 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.77 | | 0.22 | 0.29 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 28.4 | | 14.4 | 10.6 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.2 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 33.6 | | 15.5 | 12.9 | | | | | 22.0 | 26.6 | 24.1 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.6 | | | 13.2 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.9% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

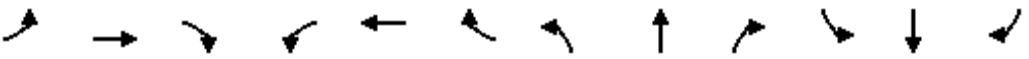
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 417 | 106 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2291 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 430 | 109 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 215 | 324 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1463 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.2 | 3.6 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.8 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.9% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 218 | 103 | 121 | 265 | 125 | 84 | 699 | 79 | 103 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2939 | | | 2922 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.74 | | | 0.75 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2182 | | | 2204 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 227 | 107 | 126 | 276 | 130 | 88 | 728 | 82 | 107 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 41 | 0 | 0 | 37 | 0 | 0 | 0 | 50 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 374 | 0 | 0 | 495 | 0 | 88 | 728 | 32 | 107 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 978 | | | 726 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.14 | | | c0.22 | | 0.20 | | 0.02 | 0.18 | | 0.03 |
| v/c Ratio | | 0.38 | | | 0.68 | | 0.53 | 0.60 | 0.06 | 0.48 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.9 | | | 24.6 | | 16.7 | 20.5 | 16.3 | 16.0 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.69 | 0.61 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.1 | | | 5.1 | | 10.4 | 2.0 | 0.2 | 5.3 | 3.1 | 0.2 |
| Delay (s) | | 18.0 | | | 29.8 | | 32.4 | 16.2 | 10.1 | 23.0 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 18.0 | | | 29.8 | | | 17.2 | | | 28.4 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 73.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 318 | 0 | 0 | 389 | 103 | 53 | 44 | 37 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1698 | | | 1650 | | | | |
| Flt Permitted | | 0.83 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1458 | | | 1698 | | | 1650 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 353 | 0 | 0 | 432 | 114 | 59 | 49 | 41 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 437 | 0 | 0 | 531 | 0 | 0 | 128 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 852 | | | 993 | | | 482 | | | | |
| v/s Ratio Prot | | | | | c0.31 | | | | | | | |
| v/s Ratio Perm | | 0.30 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.51 | | | 0.54 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 8.0 | | | 8.2 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.99 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.2 | | | 1.6 | | | 1.3 | | | | |
| Delay (s) | | 10.2 | | | 9.7 | | | 19.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.2 | | | 9.7 | | | 19.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 68.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 19 | 306 | 27 | 53 | 416 | 70 | 28 | 118 | 42 | 57 | 150 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1957 | | | 1933 | | | 2959 | | | 2985 | |
| Flt Permitted | | 0.96 | | | 0.93 | | | 0.89 | | | 0.85 | |
| Satd. Flow (perm) | | 1887 | | | 1810 | | | 2658 | | | 2572 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 21 | 340 | 30 | 59 | 462 | 78 | 31 | 131 | 47 | 63 | 167 | 47 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 27 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 386 | 0 | 0 | 591 | 0 | 0 | 182 | 0 | 0 | 251 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 871 | | | 835 | | | 1104 | | | 1068 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | | | 0.33 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.44 | | | 0.71 | | | 0.16 | | | 0.23 | |
| Uniform Delay, d1 | | 11.8 | | | 14.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.57 | | | 0.37 | | | 1.27 | | | 0.46 | |
| Incremental Delay, d2 | | 1.4 | | | 4.1 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 8.2 | | | 9.3 | | | 15.4 | | | 6.1 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 8.2 | | | 9.3 | | | 15.4 | | | 6.1 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 9.3 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.48 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 83.9% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 279 | 39 | 85 | 551 | 100 | 43 | 219 | 99 | 86 | 227 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1512 | 3039 | | 1570 | 3078 | | 1587 | 2961 | | 1585 | 3075 | |
| Flt Permitted | 0.25 | 1.00 | | 0.52 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 395 | 3039 | | 854 | 3078 | | 931 | 2961 | | 902 | 3075 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 310 | 43 | 94 | 612 | 111 | 48 | 243 | 110 | 96 | 252 | 69 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 22 | 0 | 0 | 51 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 46 | 336 | 0 | 94 | 701 | 0 | 48 | 302 | 0 | 96 | 289 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 134 | 1029 | | 289 | 1042 | | 501 | 1594 | | 486 | 1656 | |
| v/s Ratio Prot | | 0.11 | | | c0.23 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.11 | | | 0.05 | | | c0.11 | | |
| v/c Ratio | 0.34 | 0.33 | | 0.33 | 0.67 | | 0.10 | 0.19 | | 0.20 | 0.17 | |
| Uniform Delay, d1 | 16.1 | 16.0 | | 16.0 | 18.4 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.82 | 0.76 | | 1.11 | 1.12 | | 1.11 | 1.25 | | 1.08 | 1.08 | |
| Incremental Delay, d2 | 6.4 | 0.8 | | 2.9 | 3.4 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 19.6 | 13.0 | | 20.6 | 23.9 | | 8.5 | 9.9 | | 9.3 | 8.5 | |
| Level of Service | B | B | | C | C | | A | A | | A | A | |
| Approach Delay (s) | | 13.8 | | | 23.5 | | | 9.7 | | | 8.6 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 15.8 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.38 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 54.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 96 | 107 | 401 | 50 | 165 | 250 | 131 | 46 | 295 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.98 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.96 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1508 | 2988 | | 1430 | 3720 | | | 3405 | | | 3530 | |
| Flt Permitted | 0.46 | 1.00 | | 0.51 | 1.00 | | | 0.69 | | | 0.85 | |
| Satd. Flow (perm) | 726 | 2988 | | 761 | 3720 | | | 2401 | | | 3027 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 58 | 302 | 101 | 113 | 422 | 53 | 174 | 263 | 138 | 48 | 311 | 67 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 15 | 0 | 0 | 46 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 58 | 353 | 0 | 113 | 460 | 0 | 0 | 529 | 0 | 0 | 403 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 346 | 1425 | | 363 | 1774 | | | 960 | | | 1211 | |
| v/s Ratio Prot | | 0.12 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | c0.15 | | | | c0.22 | | | 0.13 | |
| v/c Ratio | 0.17 | 0.25 | | 0.31 | 0.26 | | | 0.55 | | | 0.33 | |
| Uniform Delay, d1 | 9.7 | 10.1 | | 10.4 | 10.1 | | | 15.0 | | | 13.5 | |
| Progression Factor | 1.54 | 1.77 | | 1.09 | 1.07 | | | 1.07 | | | 0.76 | |
| Incremental Delay, d2 | 1.0 | 0.4 | | 2.0 | 0.3 | | | 1.4 | | | 0.7 | |
| Delay (s) | 15.9 | 18.3 | | 13.3 | 11.2 | | | 17.5 | | | 10.9 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | | 18.0 | | | 11.6 | | | 17.5 | | | 10.9 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.42 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 64.0% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  | |
| Volume (vph) | 86 | 311 | 86 | 92 | 297 | 92 | 119 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1671 | 1436 | | 3088 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.78 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1346 | 1436 | | 2425 | | | 1305 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 346 | 96 | 102 | 330 | 102 | 132 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 31 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 442 | 50 | 0 | 503 | 0 | 0 | 262 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 704 | 751 | | 1268 | | | 422 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.03 | | 0.21 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.63 | 0.07 | | 0.40 | | | 0.62 | | | 0.41 | |
| Uniform Delay, d1 | | 11.0 | 7.7 | | 9.3 | | | 18.6 | | | 17.2 | |
| Progression Factor | | 1.41 | 3.20 | | 0.52 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 4.0 | 0.2 | | 0.9 | | | 6.7 | | | 2.3 | |
| Delay (s) | | 19.6 | 24.7 | | 5.8 | | | 25.4 | | | 19.5 | |
| Level of Service | | B | C | | A | | | C | | | B | |
| Approach Delay (s) | | 20.5 | | | 5.8 | | | 25.4 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 80.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 291 | 32 | 26 | 328 | 60 | 27 | 133 | 47 | 62 | 146 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | | 0.97 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1444 | 3021 | | 1566 | 3019 | | | 3583 | | | 3595 | |
| Flt Permitted | 0.48 | 1.00 | | 0.54 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 735 | 3021 | | 883 | 3019 | | | 3230 | | | 3066 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 323 | 36 | 29 | 364 | 67 | 30 | 148 | 52 | 69 | 162 | 72 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 66 | 346 | 0 | 29 | 408 | 0 | 0 | 200 | 0 | 0 | 261 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 339 | 1394 | | 408 | 1393 | | | 1342 | | | 1274 | |
| v/s Ratio Prot | | 0.11 | | | c0.14 | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.03 | | | | 0.06 | | | c0.09 | |
| v/c Ratio | 0.19 | 0.25 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.4 | 10.6 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.65 | 0.64 | | 0.86 | 0.70 | | | 0.95 | | | 0.41 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.1 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.7 | 7.2 | | 8.5 | 7.8 | | | 11.5 | | | 5.3 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.3 | | | 7.8 | | | 11.5 | | | 5.3 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.7 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 456 | 30 | 86 | 507 | 222 | 25 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3278 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.76 | | | 0.79 | | | 0.90 | | | 0.70 | |
| Satd. Flow (perm) | | 2512 | | | 2502 | | | 2796 | | | 2288 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 507 | 33 | 96 | 563 | 247 | 28 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 60 | 0 | 0 | 69 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 585 | 0 | 0 | 846 | 0 | 0 | 225 | 0 | 0 | 743 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 966 | | | 962 | | | 1336 | | | 598 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.34 | | | 0.05 | | | c0.32 | |
| v/c Ratio | | 0.61 | | | 0.88 | | | 0.17 | | | 1.36dl | |
| Uniform Delay, d1 | | 16.0 | | | 18.6 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.47 | | | 1.00 | | | 1.00 | | | 0.80 | |
| Incremental Delay, d2 | | 2.8 | | | 11.3 | | | 0.3 | | | 122.2 | |
| Delay (s) | | 26.4 | | | 29.9 | | | 10.5 | | | 141.4 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 26.4 | | | 29.9 | | | 10.5 | | | 141.4 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 60.0 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 86.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 899 | 138 | 48 | 794 | 0 | 82 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3037 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3037 | | | 2483 | | | 1328 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 999 | 153 | 53 | 882 | 0 | 91 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1135 | 0 | 0 | 935 | 0 | 0 | 114 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1957 | | | 910 | | | 236 | | | | | |
| v/s Ratio Prot | c0.37 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.38 | | | c0.09 | | | | | |
| v/c Ratio | 0.58 | | | 1.03 | | | 0.48 | | | | | |
| Uniform Delay, d1 | 9.1 | | | 28.5 | | | 33.3 | | | | | |
| Progression Factor | 0.16 | | | 1.43 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 35.8 | | | 6.9 | | | | | |
| Delay (s) | 1.8 | | | 76.7 | | | 40.2 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.8 | | | 76.7 | | | 40.2 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.6 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.78 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 75.1% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 224 | 642 | 24 | 112 | 614 | 185 | 61 | 4 | 107 | 212 | 10 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 471 | 3192 | | 583 | 3320 | 1485 | | 1592 | | 763 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 249 | 713 | 27 | 124 | 682 | 206 | 68 | 4 | 119 | 236 | 11 | 237 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 96 | 0 | 90 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 249 | 738 | 0 | 124 | 682 | 110 | 0 | 101 | 0 | 236 | 11 | 102 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Effective Green, g (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.42 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 452 | 1507 | | 421 | 1409 | 795 | | 214 | | 312 | 487 | 640 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.47 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.3 | | 10.9 | 18.8 | 10.5 | | 36.0 | | 28.6 | 23.5 | 15.6 |
| Progression Factor | 2.63 | 1.86 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.0 | 0.0 | 0.2 |
| Delay (s) | 25.8 | 31.3 | | 11.4 | 20.0 | 10.6 | | 38.2 | | 38.6 | 23.6 | 15.8 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 29.9 | | | 17.0 | | | 38.2 | | | 27.1 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 61.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 | | | | | | | |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 22.8 | | | | | | | | | | | | |
| Approach LOS | | | | | | C | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 7.2 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 54.2% | | ICU Level of Service | | A | | | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 483 | 64 | 212 | 535 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 574 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 537 | 71 | 236 | 594 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 596 | 0 | 236 | 594 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 452 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.19 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.24 | | | | | | | | |
| v/c Ratio | | 0.45 | | 0.52 | 0.32 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 16.7 | 9.4 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.36 | 0.17 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.3 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.5 | | 9.3 | 1.9 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.5 | | | 4.0 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 46.2% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 489 | 0 | 0 | 684 | 129 | 63 | 90 | 63 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3133 | | | 4497 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 335 | 3320 | | | 3133 | | | 4497 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 543 | 0 | 0 | 760 | 143 | 70 | 100 | 70 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 48 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 543 | 0 | 0 | 885 | 0 | 0 | 192 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 345 | 1875 | | | 1290 | | | 1428 | | | | |
| v/s Ratio Prot | 0.04 | c0.16 | | | c0.28 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.14 | | | | | | | | | | | |
| v/c Ratio | 0.31 | 0.29 | | | 0.69 | | | 0.13 | | | | |
| Uniform Delay, d1 | 19.6 | 9.6 | | | 20.5 | | | 20.7 | | | | |
| Progression Factor | 0.46 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 2.1 | 0.4 | | | 3.0 | | | 0.2 | | | | |
| Delay (s) | 11.1 | 3.3 | | | 23.5 | | | 20.9 | | | | |
| Level of Service | B | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.6 | | | 23.5 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 358 | 114 | 119 | 426 | 89 | 129 | 78 | 37 | 32 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 3005 | | | 1835 | | | 1770 | |
| Flt Permitted | | 0.62 | | | 0.65 | | | 0.72 | | | 0.94 | |
| Satd. Flow (perm) | | 1874 | | | 1968 | | | 1361 | | | 1676 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 398 | 127 | 132 | 473 | 99 | 143 | 87 | 41 | 36 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 20 | 0 | 0 | 10 | 0 | 0 | 67 | 0 |
| Lane Group Flow (vph) | 0 | 620 | 0 | 0 | 684 | 0 | 0 | 261 | 0 | 0 | 226 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 663 | | | 696 | | | 670 | | | 825 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.35 | | | c0.19 | | | 0.14 | |
| v/c Ratio | | 0.93 | | | 0.98 | | | 0.39 | | | 0.27 | |
| Uniform Delay, d1 | | 20.3 | | | 20.8 | | | 10.4 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 22.2 | | | 30.2 | | | 1.7 | | | 0.8 | |
| Delay (s) | | 42.4 | | | 51.0 | | | 12.1 | | | 10.5 | |
| Level of Service | | D | | | D | | | B | | | B | |
| Approach Delay (s) | | 42.4 | | | 51.0 | | | 12.1 | | | 10.5 | |
| Approach LOS | | D | | | D | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 36.4 | | | HCM Level of Service | | | D | | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 83.8% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 229 | 88 | 199 | 420 | 125 | 124 | 539 | 77 | 110 | 940 | 146 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1562 | 2993 | | 1574 | 3644 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.31 | 1.00 | | 0.50 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 |
| Satd. Flow (perm) | 510 | 2993 | | 836 | 3644 | | 212 | 3069 | 1333 | 545 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 241 | 93 | 209 | 442 | 132 | 131 | 567 | 81 | 116 | 989 | 154 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 33 | 0 | 0 | 0 | 51 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 112 | 286 | 0 | 209 | 541 | 0 | 131 | 567 | 30 | 116 | 989 | 56 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 230 | 986 | | 330 | 1200 | | 181 | 1119 | 486 | 300 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.10 | | c0.03 | 0.15 | | c0.05 | 0.18 | | 0.03 | c0.32 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.26 | | 0.02 | 0.14 | | 0.04 |
| v/c Ratio | 0.49 | 0.29 | | 0.63 | 0.45 | | 0.72 | 0.51 | 0.06 | 0.39 | 0.88 | 0.12 |
| Uniform Delay, d1 | 19.9 | 21.1 | | 22.2 | 22.4 | | 18.0 | 21.0 | 17.5 | 15.6 | 25.2 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.40 | 1.05 | 2.37 |
| Incremental Delay, d2 | 7.2 | 0.7 | | 8.9 | 1.2 | | 22.1 | 1.6 | 0.2 | 2.8 | 7.4 | 0.4 |
| Delay (s) | 27.1 | 21.9 | | 31.2 | 23.7 | | 40.1 | 22.7 | 17.8 | 24.6 | 33.8 | 42.7 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 23.2 | | | 25.7 | | | 25.1 | | | 34.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 48 | 348 | 30 | 83 | 601 | 84 | 33 | 100 | 53 | 51 | 124 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1965 | 1466 | | 1990 | 1480 | | 2015 | 1506 | | 1995 | 1511 |
| Flt Permitted | | 0.60 | 1.00 | | 0.87 | 1.00 | | 0.91 | 1.00 | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1184 | 1466 | | 1750 | 1480 | | 1857 | 1506 | | 1809 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 366 | 32 | 87 | 633 | 88 | 35 | 105 | 56 | 54 | 131 | 67 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 47 | 0 | 0 | 33 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 0 | 417 | 15 | 0 | 720 | 41 | 0 | 140 | 23 | 0 | 185 | 28 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 546 | 677 | | 808 | 683 | | 771 | 626 | | 751 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.35 | 0.01 | | 0.41 | 0.03 | | 0.08 | 0.02 | | 0.10 | 0.02 |
| v/c Ratio | | 0.76 | 0.02 | | 0.89 | 0.06 | | 0.18 | 0.04 | | 0.25 | 0.04 |
| Uniform Delay, d1 | | 14.6 | 9.5 | | 16.0 | 9.7 | | 12.0 | 11.3 | | 12.4 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.44 | 0.05 | | 1.09 | 1.31 | | 1.03 | 0.89 |
| Incremental Delay, d2 | | 9.8 | 0.1 | | 12.2 | 0.1 | | 0.5 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | | 24.3 | 9.6 | | 19.3 | 0.7 | | 13.6 | 14.9 | | 13.5 | 10.2 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 23.3 | | | 17.2 | | | 14.0 | | | 12.6 | |
| Approach LOS | | C | | | B | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|--------|----------------------|-----|
| HCM Average Control Delay | 17.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.59 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 100.4% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 385 | 20 | 51 | 566 | 91 | 10 | 109 | 23 | 125 | 214 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3076 | | 1550 | 3035 | | 1550 | 3017 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.55 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3076 | | 802 | 3035 | | 892 | 3017 | | 1074 | 2991 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 428 | 22 | 57 | 629 | 101 | 11 | 121 | 26 | 139 | 238 | 72 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 15 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 444 | 0 | 57 | 710 | 0 | 11 | 132 | 0 | 139 | 268 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1514 | | 271 | 1027 | | 371 | 1253 | | 446 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.14 | | | c0.23 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.13 | | |
| v/c Ratio | 0.50 | 0.29 | | 0.21 | 0.69 | | 0.03 | 0.11 | | 0.31 | 0.22 | |
| Uniform Delay, d1 | 27.3 | 9.8 | | 15.3 | 18.6 | | 11.2 | 11.6 | | 12.8 | 12.2 | |
| Progression Factor | 1.16 | 0.56 | | 0.92 | 0.96 | | 0.83 | 0.83 | | 1.11 | 1.10 | |
| Incremental Delay, d2 | 8.6 | 0.4 | | 1.0 | 2.2 | | 0.1 | 0.2 | | 1.8 | 0.4 | |
| Delay (s) | 40.4 | 5.9 | | 15.1 | 20.1 | | 9.5 | 9.8 | | 15.9 | 13.8 | |
| Level of Service | D | A | | B | C | | A | A | | B | B | |
| Approach Delay (s) | | 11.3 | | | 19.7 | | | 9.8 | | | 14.4 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 49.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 267 | 166 | 247 | 330 | 63 | 412 | 300 | 189 | 55 | 295 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2921 | | 1550 | 3025 | | | 3144 | | | 3236 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.64 | | | 0.68 | |
| Satd. Flow (perm) | 813 | 2921 | | 1550 | 3025 | | | 2049 | | | 2229 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 297 | 184 | 274 | 367 | 70 | 458 | 333 | 210 | 61 | 328 | 56 |
| RTOR Reduction (vph) | 0 | 127 | 0 | 0 | 24 | 0 | 0 | 37 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 71 | 354 | 0 | 274 | 413 | 0 | 0 | 964 | 0 | 0 | 428 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 250 | 899 | | 143 | 1350 | | | 788 | | | 857 | |
| v/s Ratio Prot | c0.12 | | | c0.18 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.47 | | | 0.19 | | |
| v/c Ratio | 0.28 | 0.39 | | 1.92 | 0.31 | | | 1.34dl | | | 0.50 | |
| Uniform Delay, d1 | 17.1 | 17.7 | | 29.5 | 11.5 | | | 20.0 | | | 15.2 | |
| Progression Factor | 0.81 | 0.68 | | 1.27 | 1.18 | | | 1.03 | | | 0.69 | |
| Incremental Delay, d2 | 2.8 | 1.3 | | 423.2 | 0.2 | | | 111.6 | | | 2.0 | |
| Delay (s) | 16.6 | 13.3 | | 460.7 | 13.8 | | | 132.3 | | | 12.5 | |
| Level of Service | B | B | | F | B | | | F | | | B | |
| Approach Delay (s) | 13.7 | | | 186.1 | | | 132.3 | | | 12.5 | | |
| Approach LOS | B | | | F | | | F | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 102.6 | HCM Level of Service | | | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 80.9% | ICU Level of Service | | | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 75 | 647 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1529 | | | 1466 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 83 | 719 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 880 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 976 | | | 936 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.60 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.94 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.6 | | | 20.3 | | | | |
| Progression Factor | | 1.06 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.5 | | | 18.1 | | | 0.9 | | | | |
| Delay (s) | | 8.5 | | | 28.8 | | | 21.2 | | | | |
| Level of Service | | A | | | C | | | C | | | | |
| Approach Delay (s) | | 8.5 | | | 28.8 | | | 21.2 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|----------------------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 133 | 474 | 615 | 39 | 119 | 174 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 140 | 499 | 647 | 41 | 125 | 183 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.83 | | | | 0.83 | 0.83 |
| vC, conflicting volume | 705 | | | | 1470 | 690 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 540 | | | | 1464 | 521 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 83 | | | | 0 | 60 |
| cM capacity (veh/h) | 829 | | | | 97 | 455 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 639 | 688 | 125 | 183 | | |
| Volume Left | 140 | 0 | 125 | 0 | | |
| Volume Right | 0 | 41 | 0 | 183 | | |
| cSH | 829 | 1700 | 97 | 455 | | |
| Volume to Capacity | 0.17 | 0.40 | 1.30 | 0.40 | | |
| Queue Length 95th (ft) | 15 | 0 | 222 | 48 | | |
| Control Delay (s) | 4.1 | 0.0 | 271.4 | 18.1 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 4.1 | 0.0 | 121.0 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 24.4 | | | | |
| Intersection Capacity Utilization | | 88.8% | | ICU Level of Service | E | |
| Analysis Period (min) | | 15 | | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | |
| Volume (vph) | 710 | 0 | 1 | 626 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 789 | 0 | 1 | 696 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 789 | 0 | 0 | 697 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.45 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.40 | | |
| v/c Ratio | 0.65 | | | 1.09 | 0.03 | |
| Uniform Delay, d1 | 7.2 | | | 27.0 | 29.8 | |
| Progression Factor | 0.12 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | | | 64.1 | 0.2 | |
| Delay (s) | 1.1 | | | 91.1 | 30.1 | |
| Level of Service | A | | | F | C | |
| Approach Delay (s) | 1.1 | | | 91.1 | 30.1 | |
| Approach LOS | A | | | F | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 43.0 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.71 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 49.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 253 | 616 | 32 | 410 | 0 | 0 | 0 | 0 | 17 | 6 | 252 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 281 | 684 | 36 | 456 | 0 | 0 | 0 | 0 | 19 | 7 | 280 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 456 | | | 281 | | | 1153 | 1150 | 483 | 667 | 808 | 456 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 456 | | | 281 | | | 1153 | 1150 | 483 | 667 | 808 | 456 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 94 | 98 | 49 |
| cM capacity (veh/h) | 1116 | | | 1264 | | | 73 | 194 | 535 | 341 | 308 | 552 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 187 | 778 | 491 | 26 | 280 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 684 | 0 | 0 | 280 | | | | | | | |
| cSH | 1700 | 1700 | 1264 | 332 | 552 | | | | | | | |
| Volume to Capacity | 0.11 | 0.46 | 0.03 | 0.08 | 0.51 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 71 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.8 | 18.1 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.9 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.6% | | | ICU Level of Service | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | 🚗🚗 | | 🚗 | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 270 | 0 | 442 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 300 | 0 | 491 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 150 | 150 | 491 | | | |
| Volume Left (vph) | 150 | 150 | 491 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.27 | 0.27 | 0.68 | | | |
| Capacity (veh/h) | 536 | 536 | 697 | | | |
| Control Delay (s) | 10.5 | 10.5 | 18.1 | | | |
| Approach Delay (s) | 10.5 | | 18.1 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.2 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 40.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue

1/14/2013
























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|----------|----------|----------------------|------|------|------|-------|-------|--------|
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 501 | 345 | 273 | 661 | 0 | 0 | 0 | 0 | 279 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 527 | 363 | 287 | 696 | 0 | 0 | 0 | 0 | 294 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 527 | 133 | 0 | 983 | 0 | 0 | 0 | 0 | 162 | 558 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1458 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.17 | | | c0.29 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.11 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.68 | 0.44 | | 0.67 | | | | | 0.83 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 54.8 | 51.3 | | 37.0 | | | | | 66.6 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.06 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.8 | 4.7 | | 0.1 | | | | | 24.9 | 43.6 | 0.2 |
| Delay (s) | | 59.6 | 56.0 | | 2.3 | | | | | 91.5 | 112.1 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 58.1 | | | 2.3 | | | 0.0 | | | 91.8 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.9 | | |
| Intersection Capacity Utilization | | | 76.6% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 292 | 488 | 0 | 0 | 602 | 144 | 332 | 214 | 196 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 542 | 0 | 0 | 669 | 160 | 369 | 238 | 218 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 60 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 542 | 0 | 0 | 669 | 78 | 280 | 485 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 842 | 1799 | | | 744 | 344 | 117 | 230 | | | | |
| v/s Ratio Prot | c0.20 | 0.16 | | | c0.21 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | 0.05 | | | | | | | |
| v/c Ratio | 0.38 | 0.30 | | | 0.90 | 0.23 | 2.39 | 2.11 | | | | |
| Uniform Delay, d1 | 22.7 | 21.5 | | | 59.6 | 49.8 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.06 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 13.7 | 0.3 | 652.3 | 513.1 | | | | |
| Delay (s) | 1.4 | 1.3 | | | 73.3 | 50.2 | 726.3 | 587.1 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.4 | | | 68.8 | | 634.4 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 230.8 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.72 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 65.0% | | | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 273 | 136 | 129 | 270 | 107 | 108 | 522 | 80 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1576 | 1600 | 1372 | 1594 | 1766 | | 1578 | 3009 | | 1537 | 3001 | |
| Flt Permitted | 0.26 | 1.00 | 1.00 | 0.41 | 1.00 | | 0.13 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | 438 | 1600 | 1372 | 683 | 1766 | | 216 | 3009 | | 527 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 287 | 143 | 136 | 284 | 113 | 114 | 549 | 84 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 100 | 0 | 16 | 0 | 0 | 13 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 147 | 287 | 43 | 136 | 381 | 0 | 114 | 620 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | | 43.0 | 36.0 | | 40.2 | 34.6 | |
| Effective Green, g (s) | 32.0 | 28.0 | 27.0 | 32.0 | 27.0 | | 41.0 | 36.0 | | 38.2 | 34.6 | |
| Actuated g/C Ratio | 0.35 | 0.31 | 0.30 | 0.35 | 0.30 | | 0.45 | 0.40 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 230 | 494 | 409 | 302 | 526 | | 188 | 1196 | | 273 | 1146 | |
| v/s Ratio Prot | c0.04 | 0.18 | | 0.03 | c0.22 | | c0.04 | 0.21 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.18 | | 0.03 | 0.13 | | | 0.23 | | | 0.15 | | |
| v/c Ratio | 0.64 | 0.58 | 0.10 | 0.45 | 0.72 | | 0.61 | 0.52 | | 0.41 | 0.84 | |
| Uniform Delay, d1 | 22.1 | 26.4 | 23.0 | 21.1 | 28.5 | | 17.4 | 20.7 | | 16.7 | 25.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.7 | 4.9 | 0.5 | 1.1 | 8.4 | | 5.4 | 1.6 | | 1.0 | 7.3 | |
| Delay (s) | 27.8 | 31.3 | 23.5 | 22.2 | 36.9 | | 22.8 | 22.3 | | 17.7 | 32.7 | |
| Level of Service | C | C | C | C | D | | C | C | | B | C | |
| Approach Delay (s) | | 28.5 | | | 33.1 | | | 22.4 | | | 31.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.6 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Volume (vph) | 39 | 348 | 61 | 73 | 437 | 82 | 37 | 59 | 34 | 36 | 91 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1970 | 1467 | | 1624 | 1381 | | 1868 | | | 1875 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.90 | 1.00 | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1833 | 1467 | | 1470 | 1381 | | 1700 | | | 1781 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 366 | 64 | 77 | 460 | 86 | 39 | 62 | 36 | 38 | 96 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 32 | 0 | 0 | 36 | 0 | 20 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 0 | 407 | 32 | 0 | 537 | 50 | 0 | 117 | 0 | 0 | 178 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 902 | 722 | | 724 | 680 | | 706 | | | 740 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | 0.02 | | 0.37 | 0.04 | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.45 | 0.04 | | 0.74 | 0.07 | | 0.17 | | | 0.24 | |
| Uniform Delay, d1 | | 10.8 | 8.6 | | 13.2 | 8.7 | | 11.9 | | | 12.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.90 | 3.28 | | 1.00 | | | 1.46 | |
| Incremental Delay, d2 | | 1.6 | 0.1 | | 2.5 | 0.1 | | 0.5 | | | 0.7 | |
| Delay (s) | | 12.4 | 8.7 | | 27.6 | 28.6 | | 12.4 | | | 18.7 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 11.9 | | | 27.8 | | | 12.4 | | | 18.7 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 19.8 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 74.2% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street


1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|------|----------------------|------|------|------|-------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 59 | 259 | 41 | 71 | 472 | 20 | 36 | 114 | 34 | 17 | 184 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1753 | 1443 | | 1724 | 1487 | | 1713 | 1489 | | 1712 | |
| Flt Permitted | | 0.47 | 1.00 | | 0.85 | 1.00 | | 0.89 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 829 | 1443 | | 1470 | 1487 | | 1541 | 1489 | | 1685 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 273 | 43 | 75 | 497 | 21 | 38 | 120 | 36 | 18 | 194 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 28 | 0 | 0 | 8 | 0 | 0 | 18 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 15 | 0 | 572 | 13 | 0 | 158 | 18 | 0 | 267 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 293 | 511 | | 520 | 526 | | 759 | 733 | | 830 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.40 | 0.01 | | 0.39 | 0.01 | | 0.10 | 0.01 | | c0.16 | |
| v/c Ratio | | 1.14 | 0.03 | | 1.10 | 0.02 | | 0.21 | 0.02 | | 0.32 | |
| Uniform Delay, d1 | | 21.0 | 13.7 | | 21.0 | 13.7 | | 9.3 | 8.5 | | 10.0 | |
| Progression Factor | | 1.73 | 3.11 | | 0.97 | 0.87 | | 0.17 | 0.23 | | 1.09 | |
| Incremental Delay, d2 | | 95.3 | 0.1 | | 65.2 | 0.1 | | 0.2 | 0.0 | | 1.0 | |
| Delay (s) | | 131.6 | 42.7 | | 85.6 | 12.0 | | 1.7 | 2.0 | | 11.9 | |
| Level of Service | | F | D | | F | B | | A | A | | B | |
| Approach Delay (s) | | 121.5 | | | 83.0 | | | 1.7 | | | 11.9 | |
| Approach LOS | | F | | | F | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 68.2 | | | | HCM Level of Service | | | | E | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 83.2% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | | | ↰ | | | ↰ | ↱ |
| Volume (vph) | 229 | 35 | 76 | 8 | 14 | 11 | 38 | 256 | 8 | 31 | 556 | 531 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1860 | 1440 | | 1765 | | | 1996 | | | 1975 | 1382 |
| Flt Permitted | | 0.76 | 1.00 | | 0.93 | | | 0.81 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1468 | 1440 | | 1657 | | | 1631 | | | 1928 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 254 | 39 | 84 | 9 | 16 | 12 | 42 | 284 | 9 | 34 | 618 | 590 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 201 |
| Lane Group Flow (vph) | 0 | 293 | 35 | 0 | 28 | 0 | 0 | 333 | 0 | 0 | 652 | 389 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 658 | 598 | | 433 | | | 803 | | | 949 | 680 |
| v/s Ratio Prot | | c0.05 | | | | | | | | | | |
| v/s Ratio Perm | | 0.13 | 0.02 | | 0.02 | | | 0.20 | | | c0.34 | 0.28 |
| v/c Ratio | | 0.45 | 0.06 | | 0.06 | | | 0.42 | | | 0.69 | 0.57 |
| Uniform Delay, d1 | | 13.6 | 11.4 | | 18.0 | | | 10.5 | | | 12.7 | 11.7 |
| Progression Factor | | 1.15 | 1.99 | | 1.00 | | | 0.51 | | | 0.76 | 0.84 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.3 | | | 1.1 | | | 3.2 | 2.7 |
| Delay (s) | | 16.8 | 22.8 | | 18.3 | | | 6.4 | | | 12.7 | 12.5 |
| Level of Service | | B | C | | B | | | A | | | B | B |
| Approach Delay (s) | | 18.1 | | | 18.3 | | | 6.4 | | | 12.6 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.7 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 78.4% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 894 | 289 | 375 | 1072 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4573 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4573 | | 190 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 941 | 304 | 395 | 1128 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 76 |
| Lane Group Flow (vph) | 0 | 1200 | 0 | 395 | 1128 | 0 | 0 | 0 | 0 | 308 | 603 | 195 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 43.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 43.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.38 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1730 | | 458 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.26 | | c0.20 | 0.34 | | | | | | | |
| v/s Ratio Perm | | | | c0.36 | | | | | | 0.21 | 0.21 | 0.14 |
| v/c Ratio | | 0.69 | | 0.86 | 0.52 | | | | | 0.85 | 0.85 | 0.55 |
| Uniform Delay, d1 | | 30.1 | | 29.1 | 10.6 | | | | | 41.4 | 41.4 | 38.0 |
| Progression Factor | | 1.00 | | 0.86 | 1.69 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.3 | | 10.4 | 0.6 | | | | | 16.7 | 9.4 | 2.1 |
| Delay (s) | | 32.4 | | 35.5 | 18.5 | | | | | 58.1 | 50.8 | 40.0 |
| Level of Service | | C | | D | B | | | | | E | D | D |
| Approach Delay (s) | | 32.4 | | | 22.9 | | | 0.0 | | | 50.2 | |
| Approach LOS | | C | | | C | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 105.3% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1066 | 0 | 0 | 1017 | 271 | 430 | 351 | 318 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Flt Permitted | 0.14 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 460 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1122 | 0 | 0 | 1071 | 285 | 453 | 369 | 335 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 85 | 0 | 62 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1122 | 0 | 0 | 1071 | 200 | 0 | 1095 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 71.2 | 71.2 | | | 53.0 | 53.0 | | 31.8 | | | | |
| Effective Green, g (s) | 71.2 | 71.2 | | | 53.0 | 53.0 | | 31.8 | | | | |
| Actuated g/C Ratio | 0.62 | 0.62 | | | 0.46 | 0.46 | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 570 | 2076 | | | 1494 | 686 | | 1250 | | | | |
| v/s Ratio Prot | 0.07 | c0.33 | | | c0.33 | | | | | | | |
| v/s Ratio Perm | 0.32 | | | | | 0.13 | | 0.24 | | | | |
| v/c Ratio | 0.63 | 0.54 | | | 0.72 | 0.29 | | 0.88 | | | | |
| Uniform Delay, d1 | 15.3 | 12.5 | | | 25.0 | 19.3 | | 39.7 | | | | |
| Progression Factor | 1.32 | 0.17 | | | 0.98 | 1.25 | | 1.00 | | | | |
| Incremental Delay, d2 | 1.5 | 0.7 | | | 2.2 | 0.8 | | 7.7 | | | | |
| Delay (s) | 21.6 | 2.8 | | | 26.6 | 25.0 | | 47.4 | | | | |
| Level of Service | C | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 7.4 | | | 26.3 | | | 47.4 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 105.3% | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 671 | 408 | 104 | 779 | 67 | 227 | 179 | 66 | 77 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1601 | 3282 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.38 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 646 | 3282 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 706 | 429 | 109 | 820 | 71 | 239 | 188 | 69 | 81 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 142 | 706 | 256 | 109 | 885 | 0 | 239 | 219 | 0 | 81 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | | pm+pt | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.3 | 68.7 | 43.4 | 34.3 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.3 | 68.7 | 43.4 | 34.3 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 426 | 1489 | 784 | 319 | 979 | | 348 | 694 | | 259 | 465 | |
| v/s Ratio Prot | c0.08 | c0.22 | 0.05 | 0.03 | c0.27 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.47 | 0.33 | 0.34 | 0.90 | | 0.69 | 0.32 | | 0.31 | 0.41 | |
| Uniform Delay, d1 | 15.9 | 21.8 | 11.6 | 23.9 | 38.8 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.81 | 0.81 | 2.26 | 1.00 | 1.00 | | 0.98 | 1.02 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.9 | 0.2 | 0.6 | 13.3 | | 5.3 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 14.5 | 18.5 | 26.4 | 24.6 | 52.1 | | 35.3 | 38.2 | | 36.9 | 45.7 | |
| Level of Service | B | B | C | C | D | | D | D | | D | D | |
| Approach Delay (s) | | 20.7 | | | 49.1 | | | 36.8 | | | 43.8 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 75.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 221 | 367 | 86 | 324 | 113 | 362 | 340 | 81 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 2910 | | 1653 | 3235 | | 1620 | 3405 | | 1580 | 3183 | |
| Flt Permitted | 0.44 | 1.00 | | 0.24 | 1.00 | | 0.32 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 794 | 2910 | | 417 | 3235 | | 544 | 3405 | | 824 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 233 | 386 | 91 | 341 | 119 | 381 | 358 | 85 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 242 | 0 | 0 | 28 | 0 | 0 | 18 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 377 | 0 | 91 | 432 | 0 | 381 | 425 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 39.6 | 32.9 | | 46.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 39.6 | 32.9 | | 46.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.34 | 0.29 | | 0.40 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 327 | 833 | | 273 | 1016 | | 454 | 1309 | | 340 | 888 | |
| v/s Ratio Prot | 0.01 | 0.13 | | c0.03 | c0.13 | | c0.15 | 0.12 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | 0.10 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.15 | 0.45 | | 0.33 | 0.43 | | 0.84 | 0.32 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 25.5 | 33.7 | | 23.1 | 31.2 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 0.97 | |
| Incremental Delay, d2 | 0.2 | 1.8 | | 0.9 | 1.3 | | 13.1 | 0.7 | | 3.8 | 2.2 | |
| Delay (s) | 25.7 | 35.4 | | 23.9 | 32.5 | | 33.9 | 25.6 | | 32.1 | 36.2 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 34.7 | | | 31.1 | | | 29.4 | | | 34.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 75.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 644 | 141 | 10 | 543 | 135 | 104 | 287 | 9 | 215 | 609 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3034 | | | 3003 | | 1452 | 3227 | | 1522 | 2872 | |
| Flt Permitted | | 0.58 | | | 0.94 | | 0.19 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | | 1777 | | | 2812 | | 284 | 3227 | | 873 | 2872 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 716 | 157 | 11 | 603 | 150 | 116 | 319 | 10 | 239 | 677 | 203 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 33 | 0 | 0 | 3 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 966 | 0 | 0 | 731 | 0 | 116 | 326 | 0 | 239 | 836 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 761 | | | 735 | | 194 | 1192 | | 416 | 1060 | |
| v/s Ratio Prot | | c0.08 | | | | | c0.04 | 0.10 | | 0.04 | c0.29 | |
| v/s Ratio Perm | | c0.41 | | | 0.26 | | 0.22 | | | 0.21 | | |
| v/c Ratio | | 1.27 | | | 0.99 | | 0.60 | 0.27 | | 0.57 | 0.79 | |
| Uniform Delay, d1 | | 20.0 | | | 24.0 | | 12.5 | 14.4 | | 13.0 | 18.2 | |
| Progression Factor | | 1.00 | | | 1.46 | | 1.21 | 0.58 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 131.5 | | | 8.7 | | 12.3 | 0.5 | | 5.7 | 6.0 | |
| Delay (s) | | 151.5 | | | 43.8 | | 27.4 | 8.9 | | 18.6 | 24.2 | |
| Level of Service | | F | | | D | | C | A | | B | C | |
| Approach Delay (s) | | 151.5 | | | 43.8 | | | 13.7 | | | 23.0 | |
| Approach LOS | | F | | | D | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 64.9 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.99 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.1% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 229 | 136 | 123 | 292 | 28 | 72 | 462 | 83 | 35 | 698 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1899 | | 1600 | 2011 | | 1676 | 3218 | | 1435 | 3274 | |
| Flt Permitted | 0.46 | 1.00 | | 0.41 | 1.00 | | 0.29 | 1.00 | | 0.42 | 1.00 | |
| Satd. Flow (perm) | 832 | 1899 | | 686 | 2011 | | 516 | 3218 | | 630 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 236 | 140 | 127 | 301 | 29 | 74 | 476 | 86 | 36 | 720 | 72 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 5 | 0 | 0 | 22 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 69 | 343 | 0 | 127 | 325 | 0 | 74 | 540 | 0 | 36 | 780 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 307 | 701 | | 253 | 743 | | 246 | 1535 | | 300 | 1561 | |
| v/s Ratio Prot | | 0.18 | | | 0.16 | | | 0.17 | | | c0.24 | |
| v/s Ratio Perm | 0.08 | | | c0.19 | | | 0.14 | | | 0.06 | | |
| v/c Ratio | 0.22 | 0.49 | | 0.50 | 0.44 | | 0.30 | 0.35 | | 0.12 | 0.50 | |
| Uniform Delay, d1 | 14.1 | 15.8 | | 15.9 | 15.4 | | 10.4 | 10.7 | | 9.4 | 11.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.33 | 1.33 | | 1.00 | 1.00 | | 1.18 | 0.96 | |
| Incremental Delay, d2 | 1.7 | 2.4 | | 0.6 | 0.2 | | 3.1 | 0.6 | | 0.4 | 0.5 | |
| Delay (s) | 15.8 | 18.2 | | 21.7 | 20.7 | | 13.5 | 11.3 | | 11.5 | 11.7 | |
| Level of Service | B | B | | C | C | | B | B | | B | B | |
| Approach Delay (s) | | 17.8 | | | 21.0 | | | 11.6 | | | 11.7 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 73.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|--------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | ↔ | | | | ↔ | | | ↔ | |
| Volume (vph) | 2 | 843 | 366 | 786 | 32 | 3 | 10 | 9 | 47 | 12 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3083 | | | | 1810 | | | 1846 | |
| Flt Permitted | | 0.95 | | 0.57 | | | | 0.96 | | | 0.87 | |
| Satd. Flow (perm) | | 3008 | | 1778 | | | | 1749 | | | 1649 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 887 | 385 | 827 | 34 | 3 | 11 | 9 | 49 | 13 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 889 | 0 | 1243 | 0 | 0 | 0 | 34 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 833 | | 859 | | | | 377 | | | 355 | |
| v/s Ratio Prot | | | | c0.13 | | | | | | | | |
| v/s Ratio Perm | | 0.30 | | c0.47 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 1.07 | | 1.83dl | | | | 0.09 | | | 0.05 | |
| Uniform Delay, d1 | | 23.5 | | 19.0 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.41 | | 0.69 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 33.1 | | 206.6 | | | | 0.5 | | | 0.3 | |
| Delay (s) | | 66.2 | | 219.6 | | | | 20.9 | | | 20.5 | |
| Level of Service | | E | | F | | | | C | | | C | |
| Approach Delay (s) | | 66.2 | | 219.6 | | | | 20.9 | | | 20.5 | |
| Approach LOS | | E | | F | | | | C | | | C | |

Intersection Summary

| | | | |
|---|--------|----------------------|------|
| HCM Average Control Delay | 150.5 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.02 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 107.3% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 276 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 291 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 294 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.19 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.23 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.85 | |
| Incremental Delay, d2 | | 130.3 | |
| Delay (s) | | 153.7 | |
| Level of Service | | F | |
| Approach Delay (s) | | 153.7 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 264 | 887 | 958 | 132 | 113 | 234 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3283 | 3260 | | 1660 | 1485 |
| Flt Permitted | | 0.53 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1751 | 3260 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 293 | 986 | 1064 | 147 | 126 | 260 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 82 |
| Lane Group Flow (vph) | 0 | 1279 | 1194 | 0 | 126 | 178 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1078 | 2006 | | 434 | 388 |
| v/s Ratio Prot | | | 0.37 | | 0.08 | |
| v/s Ratio Perm | | c0.73 | | | | c0.12 |
| v/c Ratio | | 1.54dl | 0.60 | | 0.29 | 0.46 |
| Uniform Delay, d1 | | 12.5 | 7.6 | | 19.2 | 20.1 |
| Progression Factor | | 1.24 | 0.69 | | 1.14 | 1.21 |
| Incremental Delay, d2 | | 84.9 | 0.9 | | 1.6 | 3.6 |
| Delay (s) | | 100.3 | 6.2 | | 23.4 | 28.0 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 100.3 | 6.2 | | 26.5 | |
| Approach LOS | | F | A | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|-----|
| HCM Average Control Delay | 50.8 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.97 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 83.0% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013














| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 81 | 922 | 1006 | 195 | 287 | 88 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3119 | 3112 | | 1506 | 1343 |
| Flt Permitted | | 0.68 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2145 | 3112 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 85 | 971 | 1059 | 205 | 302 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 25 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 0 | 1056 | 1239 | 0 | 302 | 46 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1122 | 1628 | | 533 | 475 |
| v/s Ratio Prot | | | 0.40 | | c0.20 | |
| v/s Ratio Perm | | c0.49 | | | | 0.03 |
| v/c Ratio | | 0.94 | 0.76 | | 0.57 | 0.10 |
| Uniform Delay, d1 | | 14.6 | 12.3 | | 17.0 | 14.0 |
| Progression Factor | | 1.12 | 1.51 | | 1.73 | 2.83 |
| Incremental Delay, d2 | | 2.1 | 1.7 | | 3.4 | 0.3 |
| Delay (s) | | 18.4 | 20.2 | | 32.8 | 40.1 |
| Level of Service | | B | C | | C | D |
| Approach Delay (s) | | 18.4 | 20.2 | | 34.5 | |
| Approach LOS | | B | C | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 21.6 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.79 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 92.1% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave






















1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Volume (vph) | 808 | 261 | 399 | 1090 | 205 | 127 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.95 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2399 | | 1788 | 2506 | 1737 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2399 | | 243 | 2506 | 1737 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 824 | 266 | 407 | 1112 | 209 | 130 |
| RTOR Reduction (vph) | 18 | 0 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 1072 | 0 | 407 | 1112 | 304 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1144 | | 116 | 1195 | 641 | |
| v/s Ratio Prot | 0.45 | | | 0.44 | c0.18 | |
| v/s Ratio Perm | | | c1.68 | | | |
| v/c Ratio | 0.94 | | 3.51 | 0.93 | 0.47 | |
| Uniform Delay, d1 | 16.1 | | 17.0 | 16.0 | 15.7 | |
| Progression Factor | 1.43 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.8 | | 1150.2 | 14.0 | 2.5 | |
| Delay (s) | 31.8 | | 1167.2 | 29.9 | 18.2 | |
| Level of Service | C | | F | C | B | |
| Approach Delay (s) | 31.8 | | | 334.7 | 18.2 | |
| Approach LOS | C | | | F | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 186.3 | | HCM Level of Service | F | |
| HCM Volume to Capacity ratio | | 2.19 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | 10.0 | |
| Intersection Capacity Utilization | | 104.3% | | ICU Level of Service | G | |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  | |
| Volume (vph) | 1 | 1620 | 38 | 112 | 861 | 1 | 62 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.30 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 592 | 3431 | 1479 | 126 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1800 | 42 | 124 | 957 | 1 | 69 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 142 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1800 | 30 | 124 | 957 | 1 | 0 | 69 | 32 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 50.1 | 50.1 | 50.1 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | | |
| Effective Green, g (s) | 50.1 | 50.1 | 50.1 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 349 | 2022 | 872 | 352 | 2644 | 1219 | | 169 | 164 | | | |
| v/s Ratio Prot | | c0.52 | | 0.06 | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.22 | | 0.00 | | c0.04 | 0.02 | | | |
| v/c Ratio | 0.00 | 0.89 | 0.03 | 0.35 | 0.36 | 0.00 | | 0.41 | 0.19 | | | |
| Uniform Delay, d1 | 7.2 | 15.1 | 7.3 | 13.6 | 2.5 | 1.8 | | 35.3 | 34.4 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 6.4 | 0.1 | 0.6 | 0.1 | 0.0 | | 1.6 | 0.6 | | | |
| Delay (s) | 7.2 | 21.5 | 7.4 | 14.2 | 2.6 | 1.8 | | 36.9 | 35.0 | | | |
| Level of Service | A | C | A | B | A | A | | D | D | | | |
| Approach Delay (s) | | 21.1 | | | 3.9 | | | 35.5 | | | 0.0 | |
| Approach LOS | | C | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 68.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















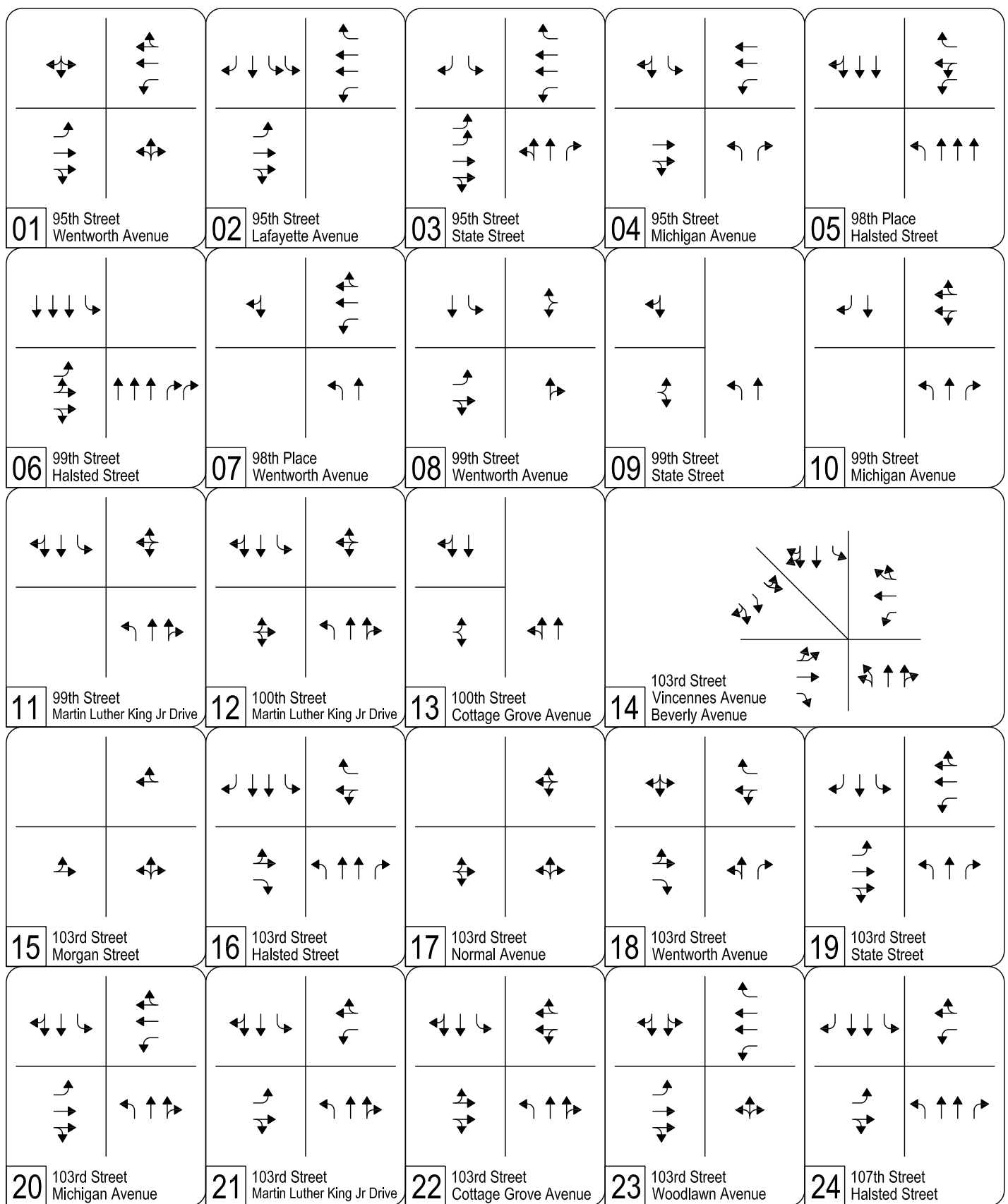
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 966 | 846 | 30 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2912 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1073 | 940 | 33 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1085 | 970 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.02 | 0.44 | | 0.73 | |
| Uniform Delay, d1 | | 28.5 | 5.5 | | 40.6 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 31.6 | 0.2 | | 32.1 | |
| Delay (s) | | 60.1 | 0.2 | | 72.7 | |
| Level of Service | | E | A | | E | |
| Approach Delay (s) | | 60.1 | 0.2 | | 72.7 | |
| Approach LOS | | E | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 33.6 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.77 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 48.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

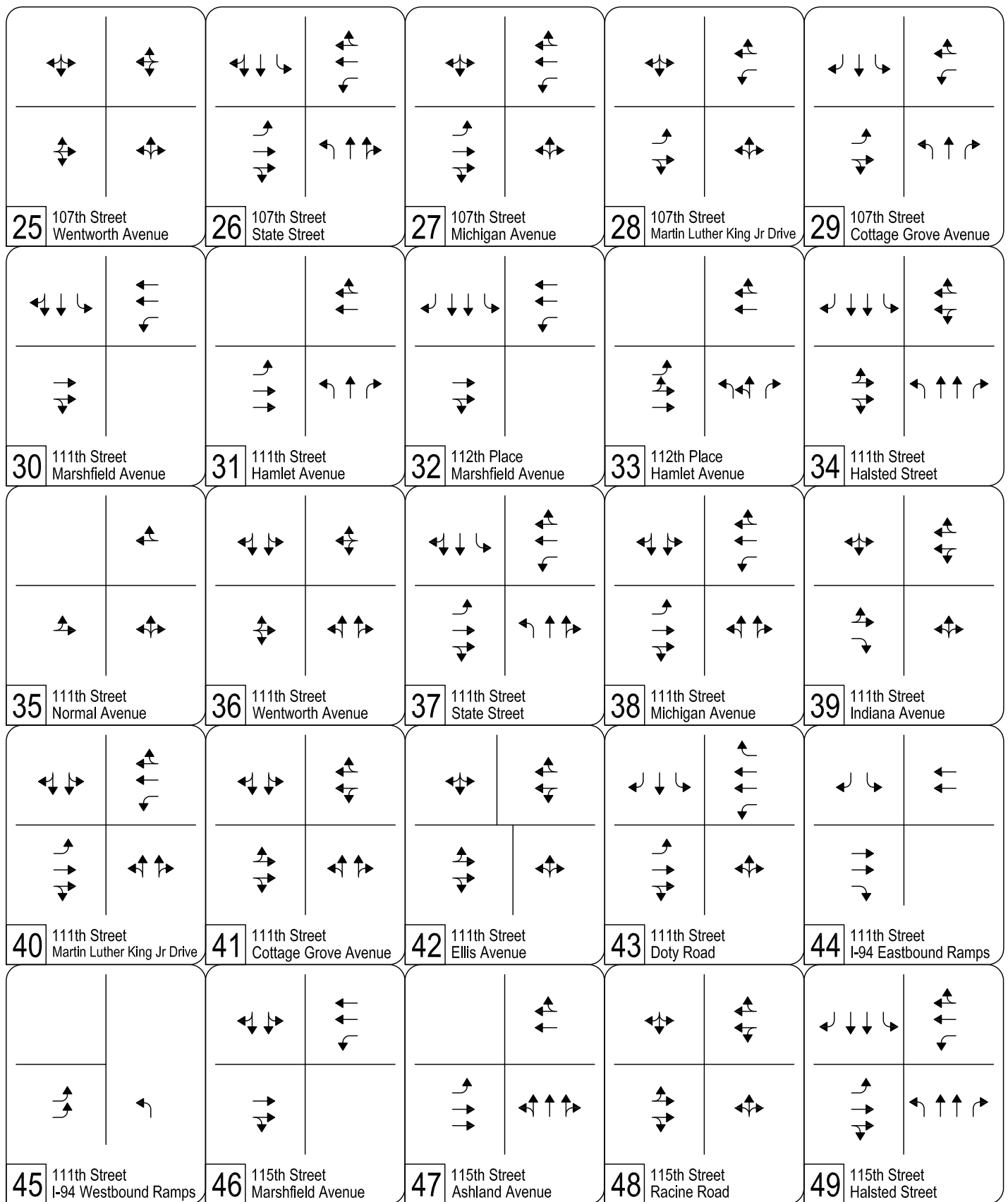
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 98 | 520 | 0 | 1 | 589 | 39 | 3 | 2 | 28 | 202 | 0 | 148 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1766 | | | 3341 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.79 | | | 0.95 | | | 0.88 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1402 | | | 3191 | | | 1296 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 578 | 0 | 1 | 654 | 43 | 3 | 2 | 31 | 224 | 0 | 164 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 110 |
| Lane Group Flow (vph) | 0 | 687 | 0 | 0 | 692 | 0 | 0 | 8 | 0 | 0 | 224 | 54 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 511 | | | 1714 | | | 137 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.07 | | | | | | c0.09 | |
| v/s Ratio Perm | | c0.49 | | | 0.15 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.34 | | | 0.40 | | | 0.06 | | | 0.47 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 12.0 | | | 34.2 | | | 24.6 | 19.9 |
| Progression Factor | | 1.00 | | | 1.40 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 167.7 | | | 0.1 | | | 0.8 | | | 3.3 | 0.6 |
| Delay (s) | | 194.7 | | | 16.8 | | | 35.0 | | | 27.8 | 20.5 |
| Level of Service | | F | | | B | | | D | | | C | C |
| Approach Delay (s) | | 194.7 | | | 16.8 | | | 35.0 | | | 24.7 | |
| Approach LOS | | F | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 86.4 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 81.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



BRT Alternative Mitigated (2030) Intersection Lane Geometry

Page 1 of 3

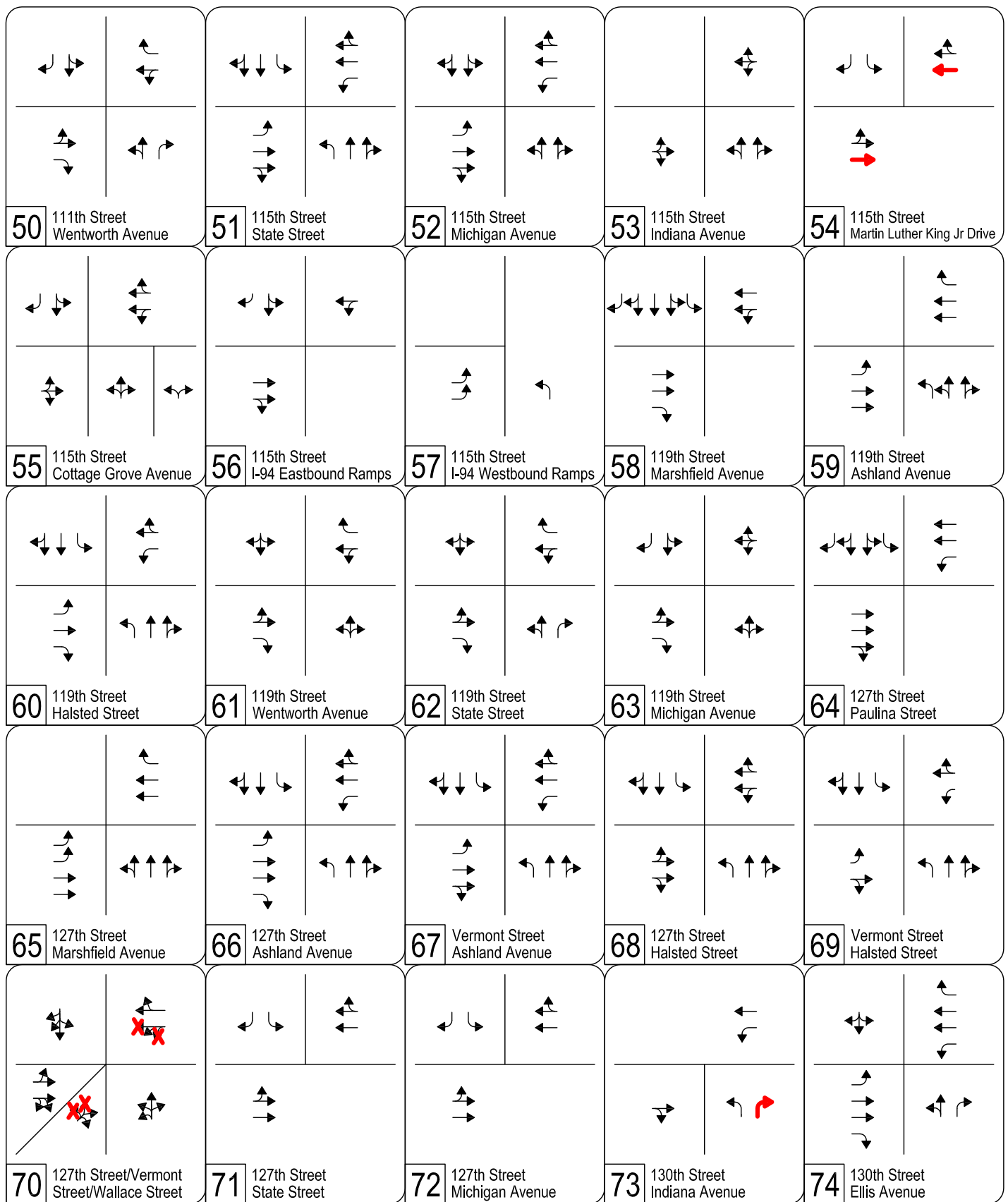
Legend: ↑ Existing ↑ Added ✗ Removed



BRT Alternative Mitigated (2030) Intersection Lane Geometry

Page 2 of 3

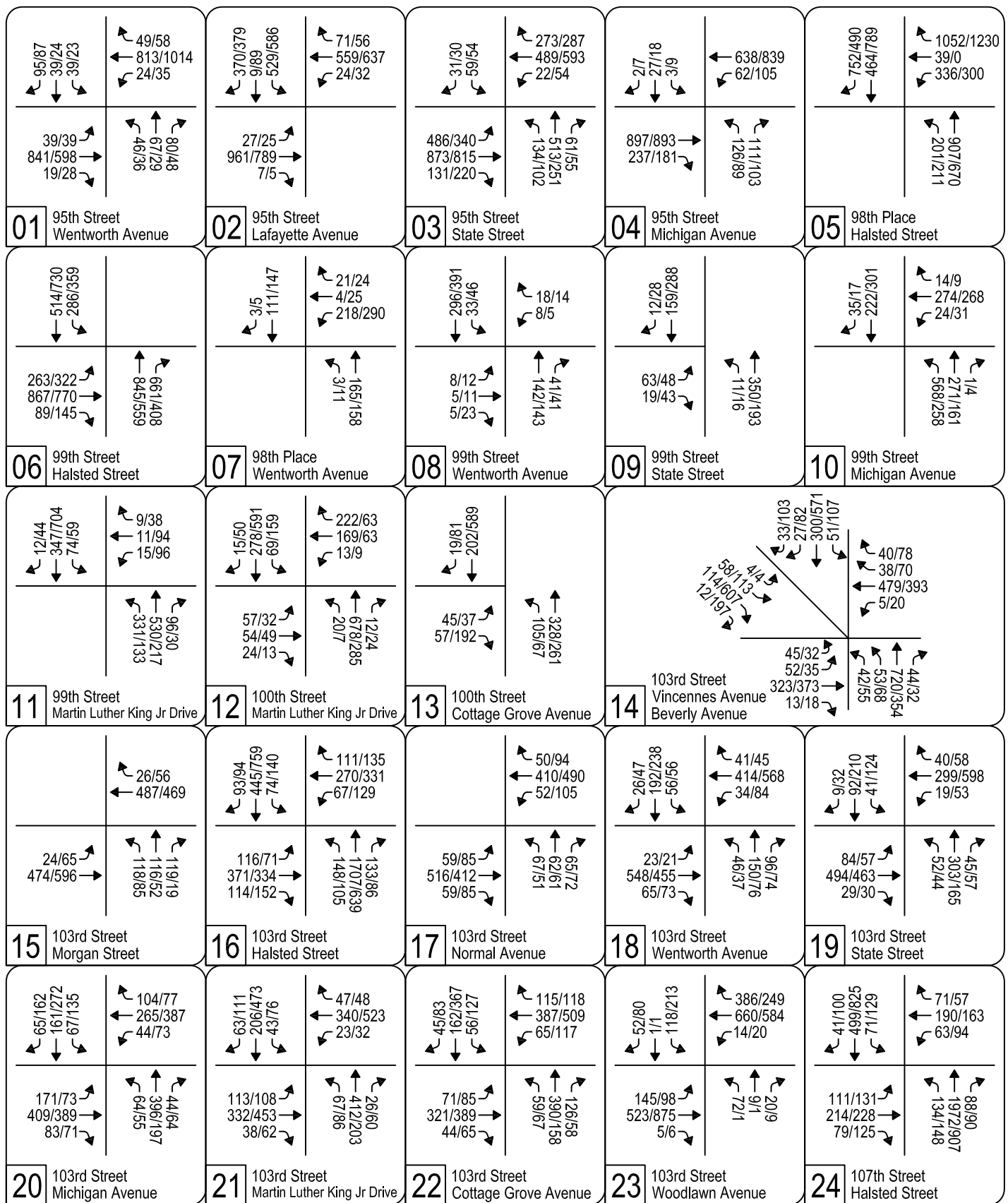
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BRT Alternative Mitigated (2030) Intersection Lane Geometry

Page 3 of 3

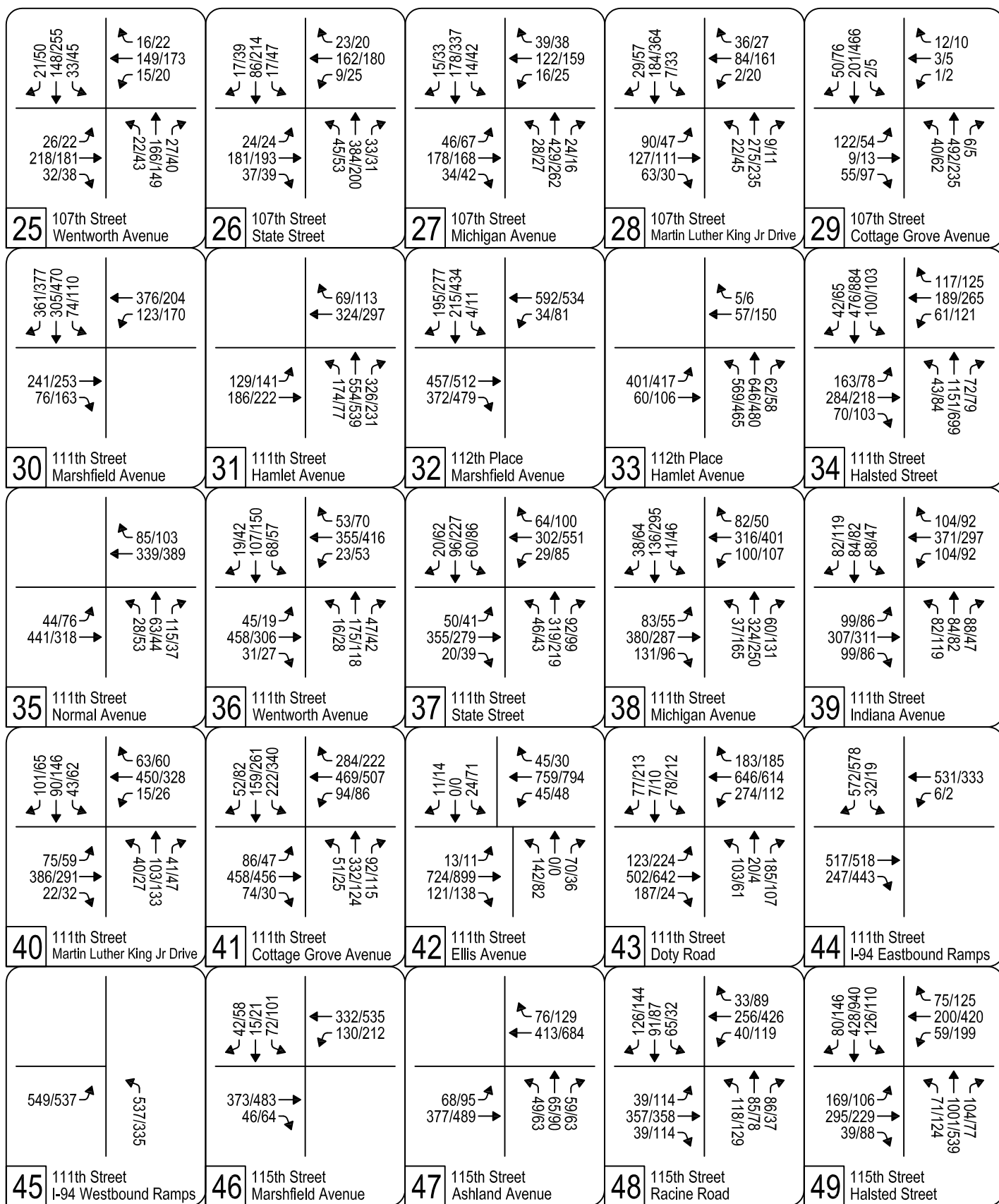
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BRT Alternative Mitigated (2030) Intersection Traffic Volumes

Page 1 of 3

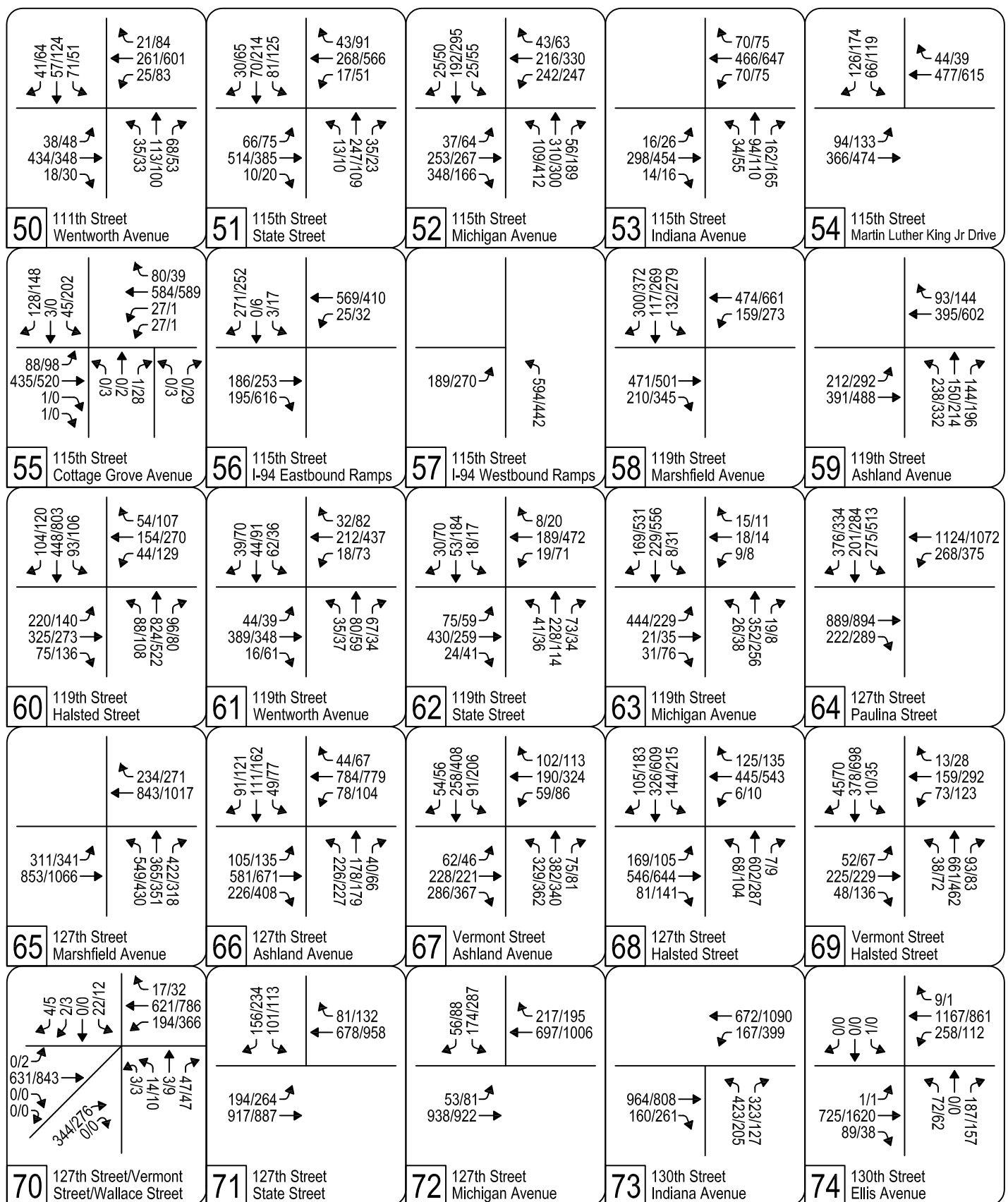
Legend: AM/PM Peak Hour Volumes



BRT Alternative Mitigated (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



BRT Alternative Mitigated (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 67 | 80 | 39 | 39 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1754 | | | 1670 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.90 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1526 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 71 | 84 | 41 | 41 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 164 | 0 | 0 | 123 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 540 | |
| v/s Ratio Prot | c0.30 | | | 0.30 | | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.7 | | | 16.4 | | | 15.7 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | 12.1 | | | 13.5 | | | 16.4 | | | 15.7 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 55.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 71 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 75 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 42 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.08 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.15 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.6 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.62 | 1.93 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.7 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.1 | 48.9 | | 4.4 | 9.8 | 26.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 11.5 | | 0.0 | | | | 55.4 | |
| Approach LOS | | D | | | B | | A | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 489 | 273 | 134 | 513 | 61 | 59 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.95 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1419 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 515 | 287 | 141 | 540 | 64 | 62 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 512 | 1048 | 0 | 23 | 515 | 129 | 0 | 681 | 39 | 62 | 0 | 3 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 40.0 | 62.0 | | 9.0 | 31.0 | 31.0 | | 31.0 | 31.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.31 | 0.48 | | 0.07 | 0.24 | 0.24 | | 0.24 | 0.24 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 982 | 1482 | | 108 | 697 | 225 | | 787 | 338 | 66 | | 57 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.18 | | | c0.21 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.52 | 0.71 | | 0.21 | 0.74 | 0.57 | | 0.87 | 0.11 | 0.94 | | 0.04 |
| Uniform Delay, d1 | 37.1 | 26.8 | | 57.2 | 45.8 | 43.6 | | 47.5 | 38.8 | 59.7 | | 55.6 |
| Progression Factor | 0.75 | 0.22 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.89 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.9 | 1.3 | | 4.5 | 6.9 | 10.1 | | 12.1 | 0.7 | 88.5 | | 0.3 |
| Delay (s) | 28.8 | 7.1 | | 61.6 | 52.7 | 53.8 | | 56.9 | 35.2 | 148.2 | | 55.9 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 14.2 | | | 53.3 | | | 55.0 | | | 116.1 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 72.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 897 | 237 | 62 | 638 | 0 | 126 | 0 | 111 | 3 | 27 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2852 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1961 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2852 | | 260 | 3005 | | 1078 | | 1465 | 1803 | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 263 | 69 | 709 | 0 | 140 | 0 | 123 | 3 | 30 | 2 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1236 | 0 | 69 | 709 | 0 | 140 | 0 | 46 | 3 | 31 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | custom | | | custom | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | | | | 6 | | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Effective Green, g (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Actuated g/C Ratio | 0.60 | | | 0.60 | | | 0.32 | | | 0.32 | | |
| Clearance Time (s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 1711 | | | 156 | | | 345 | | | 469 | | |
| v/s Ratio Prot | c0.43 | | | 0.24 | | | | | | 0.02 | | |
| v/s Ratio Perm | | | | 0.27 | | | c0.13 | | | 0.03 | | |
| v/c Ratio | 0.72 | | | 0.44 | | | 0.39 | | | 0.41 | | |
| Uniform Delay, d1 | 14.1 | | | 10.9 | | | 10.5 | | | 26.6 | | |
| Progression Factor | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 2.7 | | | 8.8 | | | 0.6 | | | 3.5 | | |
| Delay (s) | 16.8 | | | 19.7 | | | 11.1 | | | 30.1 | | |
| Level of Service | B | | | B | | | B | | | C | | |
| Approach Delay (s) | 16.8 | | | 11.9 | | | 27.4 | | | 23.6 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 62.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 336 | 39 | 1052 | 201 | 907 | 0 | 0 | 464 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3933 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3933 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 926 | 0 | 0 | 473 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 343 | 40 | 1073 | 205 | 926 | 0 | 0 | 1240 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1161 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.76 | 0.08 | 2.54 | 0.43 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.6 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.6 | 0.3 | 698.4 | 2.0 | 0.2 | | | 46.6 | |
| Delay (s) | | | | 45.2 | 27.1 | 735.9 | 21.2 | 22.1 | | | 83.6 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.8 | | | 21.9 | | | 83.6 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.3 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 89 | 0 | 0 | 0 | 0 | 845 | 661 | 286 | 514 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3185 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 92 | 0 | 0 | 0 | 0 | 871 | 681 | 295 | 530 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1006 | 0 | 0 | 0 | 0 | 0 | 871 | 681 | 295 | 530 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.11 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.46 | 1.06 | 0.43 | |
| Incremental Delay, d2 | 3.7 | 22.8 | | | | | | 0.4 | 77.5 | 2.4 | 0.1 | |
| Delay (s) | 32.4 | 57.9 | | | | | | 15.7 | 95.2 | 36.4 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 52.9 | | | 0.0 | | | 50.6 | | | 15.8 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.5 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | |  |  | |  |  | | |  | | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 165 | 0 | 0 | 111 | 3 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1960 | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 788 | 1882 | | | 1960 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 183 | 0 | 0 | 123 | 3 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 183 | 0 | 0 | 125 | 0 | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% | |
| Turn Type | Perm | | | pm+pt | | | | | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 40.0 |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 46.0 |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.54 |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 |
| Lane Grp Cap (vph) | | | | 501 | | | 861 | | | 504 | | | 1107 |
| v/s Ratio Prot | | | | | | | 0.00 | | | 0.00 | | | c0.10 |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | | |
| v/c Ratio | | | | 0.48 | | | 0.01 | | | 0.01 | | | 0.17 |
| Uniform Delay, d1 | | | | 23.4 | | | 19.9 | | | 9.9 | | | 8.0 |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.06 | | | 1.19 |
| Incremental Delay, d2 | | | | 3.3 | | | 0.0 | | | 0.0 | | | 0.3 |
| Delay (s) | | | | 26.7 | | | 19.9 | | | 10.5 | | | 9.8 |
| Level of Service | | | | C | | | B | | | B | | | A |
| Approach Delay (s) | 0.0 | | | | | | 26.0 | | | 9.8 | | | 9.8 |
| Approach LOS | A | | | | | | C | | | A | | | A |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | 17.3 | | | HCM Level of Service | | | B | | | | | | |
| HCM Volume to Capacity ratio | 0.28 | | | | | | | | | | | | |
| Actuated Cycle Length (s) | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | | | |
| Intersection Capacity Utilization | 33.3% | | | ICU Level of Service | | | A | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 8 | 0 | 18 | 0 | 142 | 41 | 33 | 296 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.91 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1603 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1509 | 1809 | | | 1558 | | | 1686 | | 1010 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 8 | 0 | 19 | 0 | 149 | 43 | 35 | 312 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 14 | 0 | 0 | 180 | 0 | 35 | 312 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 479 | 575 | | | 495 | | | 793 | | 642 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.03 | | | 0.23 | | 0.05 | 0.30 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.99 | 0.90 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.1 | | | 14.0 | | 8.6 | 8.6 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.1 | | | 14.0 | | | 8.6 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|------|------|
| Lane Configurations | W | | W | W | W | |
| Volume (vph) | 63 | 19 | 11 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 0.99 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1782 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1782 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 21 | 12 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 14 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 77 | 0 | 12 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 576 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.31 | 0.51 | 1.12 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.4 | 8.6 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.6 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 24 | 274 | 14 | 568 | 271 | 1 | 0 | 222 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3737 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.54 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3737 | | 943 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 27 | 304 | 16 | 631 | 301 | 1 | 0 | 247 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 343 | 0 | 631 | 302 | 0 | 0 | 247 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 650 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.17 | | | 0.15 | |
| v/s Ratio Perm | | | | | | | c0.47 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.97 | 0.29 | | | 0.34 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.9 | 8.2 | | | 15.4 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 28.8 | 0.7 | | | 1.3 | 0.1 |
| Delay (s) | | | | | 23.2 | | 46.7 | 8.9 | | | 16.7 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 34.5 | | | 16.2 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.6 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 64.8% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 15 | 11 | 9 | 331 | 530 | 96 | 74 | 347 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.97 | | 1.00 | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1803 | | 1692 | 3237 | | 1707 | 3353 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1803 | | 882 | 3237 | | 563 | 3353 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 17 | 12 | 10 | 368 | 589 | 107 | 82 | 386 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 32 | 0 | 368 | 676 | 0 | 82 | 396 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 553 | | 558 | 1467 | | 415 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.06 | | 0.66 | 0.46 | | 0.20 | 0.26 | |
| Uniform Delay, d1 | | | | | 18.4 | | 13.9 | 14.2 | | 12.4 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.5 | 1.0 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.6 | | 15.1 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.6 | | | 12.7 | | | 13.2 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 10.0 | | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 678 | 12 | 69 | 278 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3132 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.56 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 947 | 3232 | | 573 | 3132 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 714 | 13 | 73 | 293 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 725 | 0 | 73 | 304 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 530 | 1810 | | 321 | 1754 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.10 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.4 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.17 | 0.07 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.0 | 0.8 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 10.0 | | | 1.2 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 13.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 69.9% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 328 | 202 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 364 | 224 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 238 | 243 | 150 | 96 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.2 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 624 | 652 | 683 | 641 | 659 | |
| Control Delay (s) | 9.3 | 10.2 | 9.7 | 8.8 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 323 | 13 | 5 | 479 | 38 | 40 | 42 | 53 | 720 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3291 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.55 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 984 | 1731 | 1487 | | | 700 | 3291 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 359 | 14 | 6 | 532 | 42 | 44 | 47 | 59 | 800 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 359 | 7 | 6 | 532 | 55 | 0 | 0 | 106 | 844 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 300 | 528 | 453 | | | 167 | 784 | |
| v/s Ratio Prot | | 0.05 | c0.21 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.44 | 0.01 | 0.02 | 1.01 | 0.12 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.2 | 18.2 | 14.5 | 25.5 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.7 | 0.0 | 0.1 | 41.1 | 0.6 | | | 17.0 | 54.9 | |
| Delay (s) | | 24.1 | 19.9 | 14.5 | 25.7 | 77.6 | 26.9 | | | 52.9 | 94.9 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.7 | | | 70.1 | | | | | 90.3 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.2 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 51 | 300 | 27 | 33 | 4 | 58 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 333 | 30 | 37 | 4 | 64 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 57 | 392 | 0 | 0 | 0 | 68 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.19 | | | | | | c0.05 | |
| v/c Ratio | 0.84 | 0.51 | | | | 0.24 | 0.31 | |
| Uniform Delay, d1 | 38.4 | 35.1 | | | | 38.0 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 69.9 | 2.4 | | | | 2.0 | 1.8 | |
| Delay (s) | 108.3 | 37.5 | | | | 39.9 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 46.3 | | | | 40.1 | | |
| Approach LOS | | D | | | | D | | |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 474 | 0 | 0 | 487 | 26 | 118 | 116 | 119 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1770 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1596 | | | 1930 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 527 | 0 | 0 | 541 | 29 | 131 | 129 | 132 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 554 | 0 | 0 | 570 | 0 | 0 | 392 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 761 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.73 | | | 0.62 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 13.6 | | | 12.6 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.0 | | | 3.1 | | | 3.1 | | | | |
| Delay (s) | | 19.7 | | | 15.8 | | | 18.1 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 19.7 | | | 15.8 | | | 18.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 74.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 371 | 114 | 67 | 270 | 111 | 148 | 1707 | 133 | 74 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1922 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.65 | 1.00 | | 0.57 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1270 | 1426 | | 1113 | 1396 | 627 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 391 | 120 | 71 | 284 | 117 | 156 | 1797 | 140 | 78 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 0 | 69 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 513 | 49 | 0 | 355 | 48 | 156 | 1797 | 110 | 78 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.0 | 44.3 | 44.3 | 49.0 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 520 | 584 | | 456 | 572 | 389 | 1307 | 542 | 148 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.40 | 0.03 | | 0.32 | 0.03 | 0.17 | | 0.09 | 0.21 | | 0.03 |
| v/c Ratio | | 0.99 | 0.08 | | 0.78 | 0.08 | 0.40 | 1.37 | 0.20 | 0.53 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 30.7 | 19.0 | | 26.9 | 19.0 | 14.7 | 30.4 | 19.2 | 23.2 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.15 | 0.76 | 0.42 |
| Incremental Delay, d2 | | 35.7 | 0.3 | | 12.3 | 0.3 | 0.7 | 173.6 | 0.8 | 3.3 | 0.9 | 0.3 |
| Delay (s) | | 66.4 | 19.2 | | 39.2 | 19.2 | 15.4 | 204.0 | 20.0 | 29.9 | 17.9 | 8.3 |
| Level of Service | | E | B | | D | B | B | F | C | C | B | A |
| Approach Delay (s) | | 57.4 | | | 34.3 | | | 177.6 | | | 17.9 | |
| Approach LOS | | E | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 113.4 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.13 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 113.8% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















BRT Alternative Mitigated (2030) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 516 | 59 | 52 | 410 | 50 | 67 | 62 | 65 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1629 | | | 1627 | | | 1770 | | | | |
| Flt Permitted | | 0.91 | | | 0.89 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1494 | | | 1459 | | | 1770 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 573 | 66 | 58 | 456 | 56 | 74 | 69 | 72 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 699 | 0 | 0 | 564 | 0 | 0 | 187 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 873 | | | 853 | | | 517 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | 0.39 | | | 0.11 | | | | |
| v/c Ratio | | 0.80 | | | 0.66 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 10.5 | | | 9.1 | | | 18.2 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.6 | | | 4.0 | | | 2.0 | | | | |
| Delay (s) | | 18.2 | | | 13.1 | | | 20.2 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 18.2 | | | 13.1 | | | 20.2 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 64.6% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

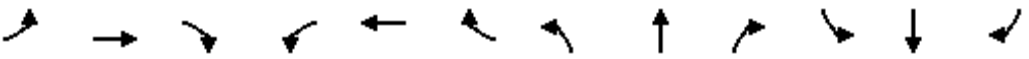










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 23 | 548 | 65 | 34 | 414 | 41 | 46 | 150 | 96 | 56 | 192 | 26 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1634 | 1288 | | 1663 | 1490 | | 1775 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.89 | 1.00 | | 0.90 | |
| Satd. Flow (perm) | | 1619 | 1255 | | 1536 | 1288 | | 1493 | 1490 | | 1613 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 24 | 577 | 68 | 36 | 436 | 43 | 48 | 158 | 101 | 59 | 202 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 69 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 601 | 39 | 0 | 472 | 26 | 0 | 206 | 32 | 0 | 283 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 928 | 720 | | 881 | 738 | | 478 | 477 | | 516 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.37 | 0.03 | | 0.31 | 0.02 | | 0.14 | 0.02 | | c0.18 | |
| v/c Ratio | | 0.65 | 0.05 | | 0.54 | 0.03 | | 0.43 | 0.07 | | 0.55 | |
| Uniform Delay, d1 | | 10.9 | 7.0 | | 9.9 | 7.0 | | 20.1 | 17.7 | | 21.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.5 | 0.1 | | 2.3 | 0.1 | | 2.8 | 0.3 | | 4.2 | |
| Delay (s) | | 14.3 | 7.2 | | 12.2 | 7.1 | | 22.9 | 18.0 | | 25.2 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.6 | | | 11.8 | | | 21.3 | | | 25.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 92.0% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 494 | 29 | 19 | 299 | 40 | 52 | 303 | 45 | 41 | 92 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1463 | 2993 | | 1459 | 3530 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.53 | 1.00 | | 0.39 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 809 | 2993 | | 602 | 3530 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 549 | 32 | 21 | 332 | 44 | 58 | 337 | 50 | 46 | 102 | 10 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 16 | 0 | 0 | 0 | 26 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 93 | 575 | 0 | 21 | 360 | 0 | 58 | 337 | 24 | 46 | 102 | 4 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 386 | 1427 | | 287 | 1684 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.19 | | | 0.10 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.24 | 0.40 | | 0.07 | 0.21 | | 0.13 | 0.51 | 0.05 | 0.16 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 11.0 | | 9.2 | 9.9 | | 12.3 | 14.7 | 11.9 | 12.5 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.63 | 0.77 | 0.35 | 0.55 | 0.55 | 0.31 |
| Incremental Delay, d2 | 1.5 | 0.8 | | 0.5 | 0.3 | | 0.6 | 2.8 | 0.2 | 1.2 | 0.6 | 0.0 |
| Delay (s) | 11.5 | 11.9 | | 9.7 | 10.2 | | 8.3 | 14.0 | 4.3 | 8.1 | 7.5 | 3.7 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.8 | | | 10.2 | | | 12.2 | | | 7.4 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 171 | 409 | 83 | 44 | 265 | 104 | 64 | 396 | 44 | 67 | 161 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 3059 | | 1588 | 2939 | | 1542 | 3028 | | 1405 | 2760 | |
| Flt Permitted | 0.51 | 1.00 | | 0.42 | 1.00 | | 0.60 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 784 | 3059 | | 707 | 2939 | | 981 | 3028 | | 652 | 2760 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 180 | 431 | 87 | 46 | 279 | 109 | 67 | 417 | 46 | 71 | 169 | 68 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 180 | 518 | 0 | 46 | 388 | 0 | 67 | 452 | 0 | 71 | 197 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 376 | 1468 | | 339 | 1411 | | 405 | 1252 | | 269 | 1141 | |
| v/s Ratio Prot | 0.17 | | | 0.13 | | | 0.15 | | | 0.07 | | |
| v/s Ratio Perm | 0.23 | | | 0.07 | | | 0.07 | | | 0.11 | | |
| v/c Ratio | 0.48 | 0.35 | | 0.14 | 0.27 | | 0.17 | 0.36 | | 0.26 | 0.17 | |
| Uniform Delay, d1 | 13.2 | 12.2 | | 10.8 | 11.7 | | 13.9 | 15.2 | | 14.5 | 13.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.3 | 0.7 | | 0.8 | 0.5 | | 0.9 | 0.8 | | 2.4 | 0.3 | |
| Delay (s) | 17.5 | 12.9 | | 11.7 | 12.2 | | 14.7 | 16.0 | | 16.9 | 14.2 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 14.1 | | | 12.1 | | | 15.8 | | | 14.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 54.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 113 | 332 | 38 | 23 | 340 | 47 | 67 | 412 | 26 | 43 | 206 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1842 | | 1534 | 3073 | | 1372 | 2867 | |
| Flt Permitted | 0.43 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 700 | 1576 | | 708 | 1842 | | 933 | 3073 | | 597 | 2867 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 119 | 349 | 40 | 24 | 358 | 49 | 71 | 434 | 27 | 45 | 217 | 66 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 119 | 389 | 0 | 24 | 407 | 0 | 71 | 461 | 0 | 45 | 283 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 438 | 738 | | 356 | 793 | | 327 | 730 | | 193 | 627 | |
| v/s Ratio Prot | c0.02 | c0.25 | | 0.00 | 0.22 | | c0.01 | c0.15 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.27 | 0.53 | | 0.07 | 0.51 | | 0.22 | 0.63 | | 0.23 | 0.45 | |
| Uniform Delay, d1 | 14.0 | 16.0 | | 15.1 | 17.7 | | 21.6 | 29.1 | | 26.1 | 28.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.7 | | 0.1 | 2.4 | | 0.3 | 4.1 | | 0.6 | 2.3 | |
| Delay (s) | 14.3 | 18.6 | | 15.1 | 20.1 | | 21.9 | 33.2 | | 26.8 | 31.1 | |
| Level of Service | B | B | | B | C | | C | C | | C | C | |
| Approach Delay (s) | | 17.6 | | | 19.8 | | | 31.7 | | | 30.5 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 64.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















BRT Alternative Mitigated (2030) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 71 | 321 | 44 | 65 | 387 | 115 | 59 | 390 | 126 | 56 | 162 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3492 | | | 2914 | | 1614 | 3156 | | 1581 | 2901 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2730 | | | 2467 | | 1034 | 3156 | | 628 | 2901 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 79 | 357 | 49 | 72 | 430 | 128 | 66 | 433 | 140 | 62 | 180 | 50 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 485 | 0 | 0 | 630 | 0 | 66 | 573 | 0 | 62 | 230 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1238 | | | 1118 | | 455 | 1389 | | 276 | 1276 | |
| v/s Ratio Prot | | | | | | | c0.18 | | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.26 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.15 | 0.41 | | 0.22 | 0.18 | |
| Uniform Delay, d1 | | 13.6 | | | 15.1 | | 12.6 | 14.4 | | 13.0 | 12.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.1 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.6 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.1 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.6 | | | 17.1 | | | 15.1 | | | 13.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.9% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 523 | 5 | 14 | 660 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 582 | 3144 | | 720 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 581 | 6 | 16 | 733 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 586 | 0 | 16 | 733 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 379 | 2046 | | 468 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.23 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.42 | 0.29 | | 0.03 | 0.35 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.5 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.4 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.6 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|-------|------|----------------------|-------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 111 | 214 | 79 | 63 | 190 | 71 | 134 | 1972 | 88 | 71 | 499 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1496 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.31 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1496 | | 513 | 1584 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 83 | 66 | 200 | 75 | 141 | 2076 | 93 | 75 | 525 | 43 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 292 | 0 | 66 | 259 | 0 | 141 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 387 | | 230 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.20 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.76 | | 0.29 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.70 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.9 | | 3.1 | 7.2 | | 2.8 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.9 | | 25.0 | 35.2 | | 11.0 | 309.6 | 8.1 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 38.2 | | | 33.2 | | | 279.3 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.2 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 218 | 32 | 15 | 149 | 16 | 22 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1837 | | | 1839 | | | 1899 | | | 1931 | |
| Flt Permitted | | 0.97 | | | 0.97 | | | 0.96 | | | 0.94 | |
| Satd. Flow (perm) | | 1782 | | | 1791 | | | 1840 | | | 1822 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 33 | 15 | 154 | 16 | 23 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 278 | 0 | 0 | 180 | 0 | 0 | 214 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 849 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.10 | | | c0.12 | | | 0.11 | |
| v/c Ratio | | 0.38 | | | 0.24 | | | 0.25 | | | 0.24 | |
| Uniform Delay, d1 | | 13.2 | | | 12.3 | | | 10.7 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.66 | | | 1.11 | | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 0.8 | | | 0.7 | | | 0.7 | |
| Delay (s) | | 14.6 | | | 9.0 | | | 12.5 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.6 | | | 9.0 | | | 12.5 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.31 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 46.0% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 37 | 9 | 162 | 23 | 45 | 384 | 33 | 17 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1466 | 2989 | | 1302 | 3018 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.62 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 960 | 2989 | | 825 | 3018 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 41 | 10 | 180 | 26 | 50 | 427 | 37 | 19 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 18 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 216 | 0 | 10 | 188 | 0 | 50 | 454 | 0 | 19 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 281 | 874 | | 241 | 882 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.05 | | | 0.03 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.4 | | 5.9 | 6.6 | | 5.8 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.76 | 0.74 | | 0.91 | 0.95 | | 0.52 | 0.46 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.8 | 13.5 | | 12.8 | 13.4 | | 5.6 | 6.6 | | 3.1 | 2.8 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.4 | | | 13.4 | | | 6.5 | | | 2.8 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 39 | 28 | 429 | 24 | 14 | 178 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2866 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1046 | 2952 | | 965 | 2866 | | | 1838 | | | 1742 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 43 | 31 | 477 | 27 | 16 | 198 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 26 | 0 | 0 | 3 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 532 | 0 | 0 | 227 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 418 | 1181 | | 386 | 1146 | | | 877 | | | 831 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.29 | | | 0.13 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.61 | | | 0.27 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.5 | | | 10.2 | |
| Progression Factor | 1.02 | 0.93 | | 0.85 | 0.87 | | | 1.26 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 3.0 | | | 0.8 | |
| Delay (s) | 13.1 | 12.1 | | 10.3 | 11.0 | | | 18.8 | | | 11.0 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.3 | | | 10.9 | | | 18.8 | | | 11.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 60.5% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 90 | 127 | 63 | 2 | 84 | 36 | 22 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1876 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.56 | 1.00 | | | 0.97 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1876 | | 942 | 1870 | | | 1925 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 70 | 2 | 93 | 40 | 24 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 211 | 0 | 2 | 133 | 0 | 0 | 340 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 577 | | 290 | 575 | | | 1096 | | | 1091 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.37 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.6 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.91 | 0.90 | | 0.89 | 0.92 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.8 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.6 | 17.6 | | 14.0 | 16.4 | | | 7.9 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.6 | | | 16.3 | | | 7.9 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.46 | 2.40 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.33 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.0 | 41.8 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.7 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 241 | 76 | 123 | 376 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 846 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 254 | 80 | 129 | 396 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 304 | 0 | 129 | 396 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 652 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.05 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.20 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.6 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.95 | 2.06 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.2 | 19.8 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.2 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | |  |  |  | | | |
| Volume (vph) | 129 | 186 | 0 | 0 | 324 | 69 | 174 | 554 | 326 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.34 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 603 | 3054 | | | 2831 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 196 | 0 | 0 | 341 | 73 | 183 | 583 | 343 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 230 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 196 | 0 | 0 | 396 | 0 | 183 | 583 | 113 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 679 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.67 | | 0.32 | 0.99 | 0.23 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.3 | | 25.1 | 33.4 | 24.3 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.93 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.8 | | 0.9 | 27.7 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.1 | | 19.8 | 54.1 | 47.6 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.1 | | | 46.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 37.6 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.61 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | | | |
| Intersection Capacity Utilization | 62.5% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 457 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 4 | 215 | 195 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3107 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3107 | | 284 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 476 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 203 |
| RTOR Reduction (vph) | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Lane Group Flow (vph) | 0 | 717 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 224 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1119 | | 393 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.64 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.6 | | 12.5 | 10.9 | | | | | 21.8 | 23.4 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.79 | 0.92 |
| Incremental Delay, d2 | | 2.8 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.4 | | 6.9 | 7.6 | | | | | 16.0 | 18.9 | 21.5 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.4 | | | 7.5 | | | 0.0 | | | 20.1 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

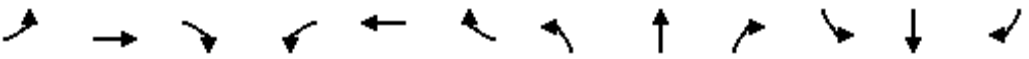
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 401 | 60 | 0 | 0 | 57 | 5 | 569 | 646 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3042 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2339 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 413 | 62 | 0 | 0 | 59 | 5 | 587 | 666 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 206 | 269 | 0 | 0 | 60 | 0 | 587 | 666 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1446 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 42.9 | 66.6 | 0.2 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 74.4 | 98.1 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.8 | | | 37.4 | | | 83.8 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.7 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 163 | 284 | 70 | 61 | 189 | 117 | 43 | 1151 | 72 | 100 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2842 | | | 2770 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.66 | | | 0.79 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1916 | | | 2214 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 296 | 73 | 64 | 197 | 122 | 45 | 1199 | 75 | 104 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 64 | 0 | 0 | 0 | 28 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 525 | 0 | 0 | 319 | 0 | 45 | 1199 | 47 | 104 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 877 | | | 729 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.21 | | | 0.14 | | 0.06 | | 0.04 | 0.27 | | 0.01 |
| v/c Ratio | | 0.60 | | | 0.44 | | 0.15 | 0.99 | 0.09 | 0.72 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.9 | | | 22.3 | | 14.7 | 25.6 | 16.5 | 19.2 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.86 | 1.42 | 1.82 | 1.63 | 3.13 |
| Incremental Delay, d2 | | 3.0 | | | 1.9 | | 0.6 | 17.7 | 0.2 | 24.6 | 1.0 | 0.1 |
| Delay (s) | | 21.9 | | | 24.2 | | 20.2 | 39.8 | 23.6 | 59.5 | 31.7 | 50.7 |
| Level of Service | | C | | | C | | C | D | C | E | C | D |
| Approach Delay (s) | | 21.9 | | | 24.2 | | | 38.2 | | | 37.5 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.5 | | | |
| Intersection Capacity Utilization | | | 82.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 441 | 0 | 0 | 339 | 85 | 28 | 63 | 115 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1707 | | | 1668 | | | 1574 | | | | |
| Flt Permitted | | 0.93 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1599 | | | 1668 | | | 1574 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 490 | 0 | 0 | 377 | 94 | 31 | 70 | 128 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 70 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 539 | 0 | 0 | 457 | 0 | 0 | 159 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 836 | | | 872 | | | 557 | | | | |
| v/s Ratio Prot | | | | | 0.27 | | | | | | | |
| v/s Ratio Perm | | 0.34 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.64 | | | 0.52 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 11.2 | | | 10.2 | | | 15.1 | | | | |
| Progression Factor | | 1.00 | | | 0.56 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.8 | | | 2.0 | | | 1.3 | | | | |
| Delay (s) | | 15.0 | | | 7.7 | | | 16.4 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 15.0 | | | 7.7 | | | 16.4 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013





















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|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 45 | 458 | 31 | 23 | 355 | 53 | 16 | 175 | 47 | 68 | 107 | 19 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 1889 | | | 1831 | | | 3160 | | | 3149 | |
| Flt Permitted | | 0.93 | | | 0.96 | | | 0.93 | | | 0.79 | |
| Satd. Flow (perm) | | 1773 | | | 1759 | | | 2958 | | | 2534 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 509 | 34 | 26 | 394 | 59 | 18 | 194 | 52 | 76 | 119 | 21 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 8 | 0 | 0 | 30 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 590 | 0 | 0 | 471 | 0 | 0 | 234 | 0 | 0 | 204 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 818 | | | 812 | | | 1229 | | | 1053 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | | | 0.27 | | | 0.08 | | | c0.08 | |
| v/c Ratio | | 0.72 | | | 0.58 | | | 0.19 | | | 0.19 | |
| Uniform Delay, d1 | | 14.1 | | | 12.9 | | | 12.1 | | | 12.1 | |
| Progression Factor | | 0.65 | | | 0.55 | | | 0.95 | | | 0.70 | |
| Incremental Delay, d2 | | 4.5 | | | 2.9 | | | 0.3 | | | 0.4 | |
| Delay (s) | | 13.6 | | | 10.0 | | | 11.8 | | | 8.9 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 13.6 | | | 10.0 | | | 11.8 | | | 8.9 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 80.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 355 | 20 | 29 | 302 | 64 | 46 | 319 | 92 | 60 | 96 | 20 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1502 | 2948 | | 1585 | 2934 | | 1497 | 3031 | | 1594 | 2943 | |
| Flt Permitted | 0.47 | 1.00 | | 0.46 | 1.00 | | 0.67 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 744 | 2948 | | 773 | 2934 | | 1056 | 3031 | | 806 | 2943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 56 | 394 | 22 | 32 | 336 | 71 | 51 | 354 | 102 | 67 | 107 | 22 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 41 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 56 | 410 | 0 | 32 | 379 | 0 | 51 | 415 | 0 | 67 | 119 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 252 | 998 | | 262 | 993 | | 569 | 1632 | | 434 | 1585 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.08 | | | 0.04 | | | 0.05 | | | 0.08 | | |
| v/c Ratio | 0.22 | 0.41 | | 0.12 | 0.38 | | 0.09 | 0.25 | | 0.15 | 0.07 | |
| Uniform Delay, d1 | 15.4 | 16.5 | | 14.8 | 16.3 | | 7.3 | 8.0 | | 7.6 | 7.2 | |
| Progression Factor | 0.63 | 0.62 | | 0.88 | 0.89 | | 0.71 | 0.73 | | 1.34 | 1.35 | |
| Incremental Delay, d2 | 1.6 | 1.0 | | 0.9 | 1.1 | | 0.3 | 0.4 | | 0.8 | 0.1 | |
| Delay (s) | 11.2 | 11.3 | | 14.1 | 15.6 | | 5.5 | 6.2 | | 10.9 | 9.8 | |
| Level of Service | B | B | | B | B | | A | A | | B | A | |
| Approach Delay (s) | 11.3 | | | 15.5 | | | 6.2 | | | 10.2 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 83 | 380 | 131 | 100 | 316 | 82 | 37 | 324 | 60 | 41 | 136 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1381 | 2934 | | 1337 | 3524 | | | 3413 | | | 3314 | |
| Flt Permitted | 0.49 | 1.00 | | 0.42 | 1.00 | | | 0.91 | | | 0.84 | |
| Satd. Flow (perm) | 719 | 2934 | | 587 | 3524 | | | 3134 | | | 2805 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 87 | 400 | 138 | 105 | 333 | 86 | 39 | 341 | 63 | 43 | 143 | 40 |
| RTOR Reduction (vph) | 0 | 53 | 0 | 0 | 35 | 0 | 0 | 20 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 87 | 485 | 0 | 105 | 384 | 0 | 0 | 423 | 0 | 0 | 202 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 343 | 1399 | | 280 | 1681 | | | 1254 | | | 1122 | |
| v/s Ratio Prot | 0.17 | | | 0.11 | | | | | | | | |
| v/s Ratio Perm | 0.12 | | | c0.18 | | | | c0.13 | | | 0.07 | |
| v/c Ratio | 0.25 | 0.35 | | 0.38 | 0.23 | | | 0.34 | | | 0.18 | |
| Uniform Delay, d1 | 10.1 | 10.7 | | 10.8 | 10.0 | | | 13.5 | | | 12.6 | |
| Progression Factor | 1.65 | 1.85 | | 0.77 | 0.72 | | | 1.00 | | | 0.64 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 3.3 | 0.3 | | | 0.7 | | | 0.3 | |
| Delay (s) | 18.4 | 20.4 | | 11.6 | 7.4 | | | 14.3 | | | 8.4 | |
| Level of Service | B | C | | B | A | | | B | | | A | |
| Approach Delay (s) | 20.1 | | | 8.3 | | | 14.3 | | | 8.4 | | |
| Approach LOS | C | | | A | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.8 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.36 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 62.1% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 99 | 307 | 99 | 104 | 371 | 104 | 82 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3036 | | | 1822 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.80 | | | 0.78 | |
| Satd. Flow (perm) | | 1223 | 1409 | | 2327 | | | 1482 | | | 1447 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 341 | 110 | 116 | 412 | 116 | 91 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 29 | 0 | 0 | 30 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 451 | 58 | 0 | 615 | 0 | 0 | 252 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 640 | 737 | | 1217 | | | 479 | | | 467 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.37 | 0.04 | | 0.26 | | | 0.17 | | | c0.18 | |
| v/c Ratio | | 0.70 | 0.08 | | 0.51 | | | 0.53 | | | 0.55 | |
| Uniform Delay, d1 | | 11.7 | 7.7 | | 10.1 | | | 17.9 | | | 18.1 | |
| Progression Factor | | 1.78 | 4.62 | | 0.43 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.2 | 0.2 | | 1.4 | | | 4.1 | | | 4.6 | |
| Delay (s) | | 27.1 | 35.8 | | 5.7 | | | 22.0 | | | 22.6 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 28.8 | | | 5.7 | | | 22.0 | | | 22.6 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 73.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 75 | 386 | 22 | 15 | 450 | 63 | 40 | 103 | 41 | 43 | 90 | 101 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3017 | | 1573 | 3003 | | | 3457 | | | 3397 | |
| Flt Permitted | 0.38 | 1.00 | | 0.46 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 597 | 3017 | | 764 | 3003 | | | 3010 | | | 3010 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 429 | 24 | 17 | 500 | 70 | 44 | 114 | 46 | 48 | 100 | 112 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 62 | 0 |
| Lane Group Flow (vph) | 83 | 447 | 0 | 17 | 553 | 0 | 0 | 179 | 0 | 0 | 198 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 257 | 1300 | | 329 | 1294 | | | 1343 | | | 1343 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.32 | 0.34 | | 0.05 | 0.43 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.4 | | 10.8 | 12.9 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.96 | 0.99 | | 1.14 | 1.00 | | | 0.98 | | | 0.83 | |
| Incremental Delay, d2 | 2.5 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.3 | 12.8 | | 12.4 | 13.3 | | | 10.6 | | | 9.1 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.0 | | | 13.3 | | | 10.6 | | | 9.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 458 | 74 | 94 | 469 | 284 | 51 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3076 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.87 | | | 0.63 | |
| Satd. Flow (perm) | | 2014 | | | 2279 | | | 2748 | | | 2005 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 509 | 82 | 104 | 521 | 316 | 57 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 98 | 0 | 0 | 32 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 671 | 0 | 0 | 843 | 0 | 0 | 496 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 806 | | | 912 | | | 1263 | | | 617 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.37 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.83 | | | 0.92 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.5 | | | 18.6 | | | 12.1 | | | 20.3 | |
| Progression Factor | | 1.73 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 9.7 | | | 16.3 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 40.0 | | | 34.9 | | | 13.0 | | | 26.4 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 40.0 | | | 34.9 | | | 13.0 | | | 26.4 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 88.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 724 | 121 | 45 | 759 | 0 | 142 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2975 | | | 3032 | | | 1585 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2975 | | | 2542 | | | 1308 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 804 | 134 | 50 | 843 | 0 | 158 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 920 | 0 | 0 | 893 | 0 | 0 | 216 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 63.0 | | | 33.0 | | | 18.0 | | | | | |
| Effective Green, g (s) | 56.0 | | | 33.0 | | | 18.0 | | | | | |
| Actuated g/C Ratio | 0.62 | | | 0.37 | | | 0.20 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1851 | | | 932 | | | 262 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.17 | | | | | |
| v/c Ratio | 0.50 | | | 0.96 | | | 0.82 | | | | | |
| Uniform Delay, d1 | 9.3 | | | 27.8 | | | 34.5 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.9 | | | 24.6 | | | | | |
| Delay (s) | 0.8 | | | 62.5 | | | 59.1 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.8 | | | 62.5 | | | 59.1 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 34.1 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.81 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.0% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 187 | 274 | 646 | 183 | 103 | 20 | 185 | 78 | 7 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 508 | 3020 | | 340 | 3257 | 1457 | | 1581 | | 690 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 208 | 304 | 718 | 203 | 114 | 22 | 206 | 87 | 8 | 86 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 74 | 0 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 137 | 724 | 0 | 304 | 718 | 99 | 0 | 268 | 0 | 87 | 8 | 40 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Effective Green, g (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Actuated g/C Ratio | 0.44 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 331 | 1027 | | 380 | 1274 | 709 | | 365 | | 338 | 617 | 677 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.71 | | 0.80 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.8 | | 14.8 | 21.4 | 12.7 | | 32.0 | | 21.2 | 18.5 | 13.3 |
| Progression Factor | 1.91 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.6 | | 12.0 | 1.8 | 0.1 | | 8.0 | | 0.4 | 0.0 | 0.1 |
| Delay (s) | 30.5 | 44.5 | | 26.8 | 23.2 | 12.8 | | 40.0 | | 21.6 | 18.5 | 13.3 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.4 | | | 22.4 | | | 40.0 | | | 17.5 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 74.4% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 517 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 574 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 574 | | | 883 | 1178 | 287 | 891 | 1178 | 295 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 574 | | | 883 | 1178 | 287 | 891 | 1178 | 295 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 |
| cM capacity (veh/h) | 961 | | | 974 | | | 19 | 184 | 701 | 231 | 184 | 692 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 287 | 287 | 274 | 203 | 393 | 36 | 636 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | |
| cSH | 1700 | 1700 | 1700 | 974 | 1700 | 231 | 692 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | |
| Lane LOS | | | | A | | C | E | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 40.6 | | | | | | |
| Approach LOS | | | | | | E | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 12.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 59.7% | ICU Level of Service | | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 549 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 610 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 305 | 305 | 597 | | | |
| Volume Left (vph) | 305 | 305 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 499 | 499 | 618 | | | |
| Control Delay (s) | 18.2 | 18.2 | 49.1 | | | |
| Approach Delay (s) | 18.2 | | 49.1 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 373 | 46 | 130 | 332 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3097 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.43 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3097 | | 706 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 414 | 51 | 144 | 369 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 454 | 0 | 144 | 369 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1312 | | 509 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.15 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.35 | | 0.28 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.5 | | 11.9 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.28 | 0.23 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.3 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.3 | | 4.6 | 2.2 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.3 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 34.9% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 68 | 377 | 0 | 0 | 413 | 76 | 49 | 65 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3076 | | | 4377 | | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 640 | 3257 | | | 3076 | | | 4377 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 419 | 0 | 0 | 459 | 84 | 54 | 72 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 419 | 0 | 0 | 525 | 0 | 0 | 147 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 478 | 1839 | | | 1267 | | | 1390 | | | | |
| v/s Ratio Prot | 0.02 | c0.13 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.23 | | | 0.41 | | | 0.11 | | | | |
| Uniform Delay, d1 | 12.3 | 9.2 | | | 17.7 | | | 20.5 | | | | |
| Progression Factor | 0.31 | 0.30 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 4.5 | 3.1 | | | 18.7 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.3 | | | 18.7 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 357 | 39 | 40 | 256 | 33 | 118 | 85 | 86 | 65 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.96 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2986 | | | 2976 | | | 1773 | | | 1752 | |
| Flt Permitted | | 0.89 | | | 0.85 | | | 0.77 | | | 0.86 | |
| Satd. Flow (perm) | | 2673 | | | 2560 | | | 1387 | | | 1526 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 397 | 43 | 44 | 284 | 37 | 131 | 94 | 96 | 72 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 45 | 0 |
| Lane Group Flow (vph) | 0 | 472 | 0 | 0 | 352 | 0 | 0 | 297 | 0 | 0 | 268 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 946 | | | 906 | | | 683 | | | 751 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | | | 0.14 | | | c0.21 | | | 0.18 | |
| v/c Ratio | | 0.50 | | | 0.39 | | | 0.44 | | | 0.36 | |
| Uniform Delay, d1 | | 16.5 | | | 15.7 | | | 10.7 | | | 10.2 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.9 | | | 1.3 | | | 2.0 | | | 1.3 | |
| Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.5 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.4 | | | 17.0 | | | 12.7 | | | 11.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 65.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 295 | 39 | 59 | 200 | 75 | 71 | 1001 | 104 | 126 | 428 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1551 | 3023 | | 1593 | 3505 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.55 | 1.00 | | 0.49 | 1.00 | | 0.43 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 891 | 3023 | | 819 | 3505 | | 675 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 311 | 41 | 62 | 211 | 79 | 75 | 1054 | 109 | 133 | 451 | 84 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 45 | 0 | 0 | 0 | 65 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 178 | 340 | 0 | 62 | 245 | 0 | 75 | 1054 | 44 | 133 | 451 | 33 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 346 | 996 | | 325 | 1155 | | 324 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.02 | 0.11 | | 0.01 | 0.07 | | 0.01 | c0.35 | | c0.04 | 0.15 | |
| v/s Ratio Perm | c0.16 | | | 0.06 | | | 0.09 | | 0.03 | 0.35 | | 0.03 |
| v/c Ratio | 0.51 | 0.34 | | 0.19 | 0.21 | | 0.23 | 0.89 | 0.08 | 0.92 | 0.39 | 0.07 |
| Uniform Delay, d1 | 20.9 | 21.5 | | 18.6 | 20.5 | | 15.0 | 24.3 | 16.4 | 21.1 | 18.7 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.17 | 0.62 | 0.80 |
| Incremental Delay, d2 | 5.4 | 0.9 | | 1.3 | 0.4 | | 1.7 | 10.5 | 0.3 | 54.0 | 0.9 | 0.2 |
| Delay (s) | 26.3 | 22.5 | | 19.9 | 21.0 | | 16.6 | 34.8 | 16.8 | 99.7 | 12.6 | 13.3 |
| Level of Service | C | C | | B | C | | B | C | B | F | B | B |
| Approach Delay (s) | | 23.8 | | | 20.8 | | | 32.1 | | | 30.0 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 38 | 434 | 18 | 25 | 261 | 21 | 35 | 113 | 68 | 71 | 57 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.97 | 1.00 |
| Satd. Flow (prot) | | 1935 | 1382 | | 1947 | 1331 | | 1970 | 1452 | | 1933 | 1430 |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.92 | 1.00 | | 0.80 | 1.00 |
| Satd. Flow (perm) | | 1860 | 1382 | | 1848 | 1331 | | 1839 | 1452 | | 1581 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 457 | 19 | 26 | 275 | 22 | 37 | 119 | 72 | 75 | 60 | 43 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 42 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 0 | 497 | 9 | 0 | 301 | 10 | 0 | 156 | 30 | 0 | 135 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 858 | 638 | | 853 | 614 | | 764 | 603 | | 657 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.01 | | 0.16 | 0.01 | | 0.08 | 0.02 | | c0.09 | 0.01 |
| v/c Ratio | | 0.58 | 0.01 | | 0.35 | 0.02 | | 0.20 | 0.05 | | 0.21 | 0.03 |
| Uniform Delay, d1 | | 12.9 | 9.5 | | 11.3 | 9.5 | | 12.1 | 11.3 | | 12.1 | 11.2 |
| Progression Factor | | 1.00 | 1.00 | | 0.38 | 0.16 | | 1.18 | 1.66 | | 0.99 | 0.83 |
| Incremental Delay, d2 | | 2.8 | 0.0 | | 1.1 | 0.0 | | 0.6 | 0.2 | | 0.7 | 0.1 |
| Delay (s) | | 15.7 | 9.5 | | 5.3 | 1.6 | | 14.9 | 18.9 | | 12.7 | 9.4 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 15.5 | | | 5.1 | | | 16.2 | | | 11.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 67.3% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 514 | 10 | 17 | 268 | 43 | 13 | 247 | 35 | 81 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3031 | | 1520 | 2977 | | 1520 | 2983 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.43 | 1.00 | | 0.68 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3031 | | 692 | 2977 | | 1091 | 2983 | | 871 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 571 | 11 | 19 | 298 | 48 | 14 | 274 | 39 | 90 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 20 | 0 | 0 | 17 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 580 | 0 | 19 | 326 | 0 | 14 | 296 | 0 | 90 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1492 | | 234 | 1008 | | 453 | 1239 | | 362 | 1206 | |
| v/s Ratio Prot | c0.05 | c0.19 | | | 0.11 | | | 0.10 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.03 | | | 0.01 | | | c0.10 | | |
| v/c Ratio | 0.45 | 0.39 | | 0.08 | 0.32 | | 0.03 | 0.24 | | 0.25 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 10.4 | | 14.6 | 16.0 | | 11.3 | 12.3 | | 12.4 | 11.5 | |
| Progression Factor | 1.07 | 0.60 | | 1.00 | 1.00 | | 0.54 | 0.56 | | 1.12 | 1.08 | |
| Incremental Delay, d2 | 7.8 | 0.7 | | 0.7 | 0.9 | | 0.1 | 0.4 | | 1.6 | 0.1 | |
| Delay (s) | 36.9 | 6.9 | | 15.3 | 16.8 | | 6.2 | 7.3 | | 15.5 | 12.5 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.3 | | | 16.7 | | | 7.3 | | | 13.8 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 6.0 | | |
| Intersection Capacity Utilization | | | 45.1% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 253 | 348 | 242 | 216 | 43 | 109 | 310 | 56 | 25 | 192 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2776 | | 1520 | 2964 | | | 3163 | | | 3190 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.80 | | | 0.88 | |
| Satd. Flow (perm) | 921 | 2776 | | 1520 | 2964 | | | 2565 | | | 2816 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 281 | 387 | 269 | 240 | 48 | 121 | 344 | 62 | 28 | 213 | 28 |
| RTOR Reduction (vph) | 0 | 270 | 0 | 0 | 22 | 0 | 0 | 17 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 41 | 398 | 0 | 269 | 266 | 0 | 0 | 510 | 0 | 0 | 254 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 15.0 | 15.0 | | 14.0 | 32.0 | | | 17.0 | | | 17.0 | |
| Effective Green, g (s) | 15.0 | 15.0 | | 14.0 | 32.0 | | | 17.0 | | | 17.0 | |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.23 | 0.53 | | | 0.28 | | | 0.28 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 230 | 694 | | 355 | 1581 | | | 727 | | | 798 | |
| v/s Ratio Prot | c0.14 | | | c0.18 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.20 | | | 0.09 | | |
| v/c Ratio | 0.18 | 0.57 | | 0.76 | 0.17 | | | 0.70 | | | 0.32 | |
| Uniform Delay, d1 | 17.7 | 19.7 | | 21.4 | 7.2 | | | 19.2 | | | 16.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.7 | 3.4 | | 14.0 | 0.2 | | | 5.6 | | | 1.0 | |
| Delay (s) | 19.4 | 23.1 | | 35.5 | 7.4 | | | 24.8 | | | 18.0 | |
| Level of Service | B | C | | D | A | | | C | | | B | |
| Approach Delay (s) | 22.9 | | | 21.0 | | | 24.8 | | | 18.0 | | |
| Approach LOS | C | | | C | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 22.2 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.64 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 60.0 | | | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | 68.2% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 298 | 14 | 70 | 466 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1587 | | | 1566 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1451 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 331 | 16 | 78 | 518 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 363 | 0 | 0 | 668 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 935 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.24 | | | 0.46 | | | 0.06 | | | | |
| v/c Ratio | | 0.37 | | | 0.71 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.6 | | | 20.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.1 | | | 4.6 | | | 0.8 | | | | |
| Delay (s) | | 6.4 | | | 12.3 | | | 21.1 | | | | |
| Level of Service | | A | | | B | | | C | | | | |
| Approach Delay (s) | | 6.4 | | | 12.3 | | | 21.1 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

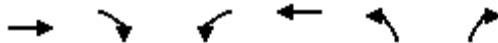


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (veh/h) | 94 | 366 | 477 | 44 | 66 | 126 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 99 | 385 | 502 | 46 | 69 | 133 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 569 | | | | 942 | 298 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 569 | | | | 942 | 298 |
| tC, single (s) | 4.3 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 70 | 81 |
| cM capacity (veh/h) | 920 | | | | 229 | 686 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | SB 1 | SB 2 |
| Volume Total | 227 | 257 | 335 | 214 | 69 | 133 |
| Volume Left | 99 | 0 | 0 | 0 | 69 | 0 |
| Volume Right | 0 | 0 | 0 | 46 | 0 | 133 |
| cSH | 920 | 1700 | 1700 | 1700 | 229 | 686 |
| Volume to Capacity | 0.11 | 0.15 | 0.20 | 0.13 | 0.30 | 0.19 |
| Queue Length 95th (ft) | 9 | 0 | 0 | 0 | 31 | 18 |
| Control Delay (s) | 4.7 | 0.0 | 0.0 | 0.0 | 27.5 | 11.5 |
| Lane LOS | A | | | | D | B |
| Approach Delay (s) | 2.2 | | 0.0 | | 17.0 | |
| Approach LOS | | | | | C | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.6 | | | |
| Intersection Capacity Utilization | | | 43.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 477 | 1 | 27 | 691 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1664 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 530 | 1 | 30 | 768 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 531 | 0 | 0 | 798 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 74.0 | | | 44.0 | | |
| Effective Green, g (s) | 70.0 | | | 44.0 | | |
| Actuated g/C Ratio | 0.78 | | | 0.49 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1333 | | | 814 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.48 | | |
| v/c Ratio | 0.40 | | | 0.98 | | |
| Uniform Delay, d1 | 3.2 | | | 22.6 | | |
| Progression Factor | 0.03 | | | 1.00 | | |
| Incremental Delay, d2 | 0.5 | | | 27.1 | | |
| Delay (s) | 0.6 | | | 49.7 | | |
| Level of Service | A | | | D | | |
| Approach Delay (s) | 0.6 | | | 49.7 | 0.0 | |
| Approach LOS | A | | | D | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.1 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.75 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 19.0 |
| Intersection Capacity Utilization | | | 64.8% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 186 | 195 | 25 | 569 | 0 | 0 | 0 | 0 | 3 | 0 | 271 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 207 | 217 | 28 | 632 | 0 | 0 | 0 | 0 | 3 | 0 | 301 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 632 | | | 207 | | | 1003 | 1003 | 212 | 791 | 894 | 632 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 632 | | | 207 | | | 1003 | 1003 | 212 | 791 | 894 | 632 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 28 |
| cM capacity (veh/h) | 960 | | | 983 | | | 55 | 237 | 800 | 278 | 274 | 418 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 138 | 286 | 660 | 3 | 301 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 217 | 0 | 0 | 301 | | | | | | | |
| cSH | 1700 | 1700 | 983 | 278 | 418 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.72 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 140 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 18.1 | 32.8 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 32.7 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 7.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 58.4% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | ←← | | ← | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 189 | 0 | 594 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 210 | 0 | 660 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 105 | 105 | 660 | | | |
| Volume Left (vph) | 105 | 105 | 660 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.89 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 33.9 | | | |
| Approach Delay (s) | 10.3 | | 33.9 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 28.2 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 47.1% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 471 | 210 | 159 | 474 | 0 | 0 | 0 | 0 | 132 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 496 | 221 | 167 | 499 | 0 | 0 | 0 | 0 | 139 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 94 |
| Lane Group Flow (vph) | 0 | 496 | 72 | 0 | 666 | 0 | 0 | 0 | 0 | 76 | 246 | 64 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.1 | 39.1 | | 72.6 | | | | | 20.2 | 20.2 | 65.3 |
| Effective Green, g (s) | | 39.1 | 39.1 | | 72.6 | | | | | 20.2 | 20.2 | 65.3 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.45 | | | | | 0.13 | 0.13 | 0.41 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 728 | 294 | | 1530 | | | | | 170 | 466 | 458 |
| v/s Ratio Prot | | c0.17 | | | c0.20 | | | | | 0.06 | c0.07 | |
| v/s Ratio Perm | | | 0.06 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.68 | 0.25 | | 0.44 | | | | | 0.45 | 0.53 | 0.14 |
| Uniform Delay, d1 | | 54.8 | 48.6 | | 29.7 | | | | | 64.7 | 65.4 | 29.7 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.1 | 2.0 | | 0.1 | | | | | 1.9 | 1.1 | 0.1 |
| Delay (s) | | 59.9 | 50.6 | | 0.7 | | | | | 66.6 | 66.5 | 29.9 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 57.0 | | | 0.7 | | | 0.0 | | | 56.5 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 30.1 | | |
| Intersection Capacity Utilization | | | 53.4% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 391 | 0 | 0 | 395 | 93 | 238 | 150 | 144 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3001 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 3001 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 434 | 0 | 0 | 439 | 103 | 264 | 167 | 160 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 63 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 434 | 0 | 0 | 439 | 21 | 201 | 327 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 79.4 | 79.4 | | | 32.7 | 32.7 | 21.0 | 21.0 | | | | |
| Effective Green, g (s) | 79.4 | 79.4 | | | 32.7 | 32.7 | 21.0 | 21.0 | | | | |
| Actuated g/C Ratio | 0.50 | 0.50 | | | 0.20 | 0.20 | 0.13 | 0.13 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 781 | 1670 | | | 644 | 298 | 201 | 394 | | | | |
| v/s Ratio Prot | c0.15 | 0.13 | | | c0.14 | | c0.13 | 0.11 | | | | |
| v/s Ratio Perm | | | | | | 0.01 | | | | | | |
| v/c Ratio | 0.30 | 0.26 | | | 0.68 | 0.07 | 1.00 | 0.83 | | | | |
| Uniform Delay, d1 | 23.9 | 23.3 | | | 58.8 | 51.4 | 69.5 | 67.8 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 3.0 | 0.1 | 63.5 | 13.8 | | | | |
| Delay (s) | 1.8 | 1.8 | | | 61.8 | 51.5 | 133.0 | 81.6 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.8 | | | 59.9 | | | 99.1 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.1 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 28.9 | | | |
| Intersection Capacity Utilization | | | 50.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 325 | 75 | 44 | 154 | 54 | 88 | 824 | 96 | 93 | 448 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1328 | 1595 | 1713 | | 1525 | 2965 | | 1509 | 2870 | |
| Flt Permitted | 0.49 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.34 | 1.00 | | 0.13 | 1.00 | |
| Satd. Flow (perm) | 791 | 1556 | 1328 | 706 | 1713 | | 539 | 2965 | | 214 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 342 | 79 | 46 | 162 | 57 | 93 | 867 | 101 | 98 | 472 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 14 | 0 | 0 | 10 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 232 | 342 | 27 | 46 | 205 | 0 | 93 | 958 | 0 | 98 | 559 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 368 | 557 | 461 | 269 | 539 | | 275 | 1125 | | 154 | 1089 | |
| v/s Ratio Prot | c0.04 | c0.22 | | 0.01 | 0.12 | | 0.02 | c0.32 | | c0.03 | 0.19 | |
| v/s Ratio Perm | 0.21 | | 0.02 | 0.05 | | | 0.12 | | | 0.23 | | |
| v/c Ratio | 0.63 | 0.61 | 0.06 | 0.17 | 0.38 | | 0.34 | 0.85 | | 0.64 | 0.51 | |
| Uniform Delay, d1 | 21.3 | 23.7 | 19.6 | 20.5 | 24.0 | | 16.6 | 25.6 | | 18.6 | 21.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.5 | 5.0 | 0.2 | 0.3 | 2.0 | | 0.7 | 8.2 | | 8.3 | 1.7 | |
| Delay (s) | 24.8 | 28.7 | 19.8 | 20.8 | 26.0 | | 17.3 | 33.8 | | 26.9 | 23.2 | |
| Level of Service | C | C | B | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 26.3 | | | 25.1 | | | 32.3 | | | 23.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 44 | 389 | 16 | 18 | 212 | 32 | 35 | 80 | 67 | 62 | 44 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1909 | 1482 | | 1599 | 1198 | | 1841 | | | 1814 | |
| Flt Permitted | | 0.95 | 1.00 | | 0.96 | 1.00 | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | | 1831 | 1482 | | 1543 | 1198 | | 1741 | | | 1549 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 46 | 409 | 17 | 19 | 223 | 34 | 37 | 84 | 71 | 65 | 46 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 17 | 0 | 33 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 0 | 455 | 9 | 0 | 242 | 17 | 0 | 159 | 0 | 0 | 132 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 901 | 730 | | 760 | 590 | | 723 | | | 643 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.25 | 0.01 | | 0.16 | 0.01 | | c0.09 | | | 0.08 | |
| v/c Ratio | | 0.50 | 0.01 | | 0.32 | 0.03 | | 0.22 | | | 0.20 | |
| Uniform Delay, d1 | | 11.1 | 8.4 | | 9.9 | 8.5 | | 12.2 | | | 12.1 | |
| Progression Factor | | 1.00 | 1.00 | | 2.04 | 3.30 | | 1.00 | | | 1.42 | |
| Incremental Delay, d2 | | 2.0 | 0.0 | | 1.0 | 0.1 | | 0.7 | | | 0.7 | |
| Delay (s) | | 13.2 | 8.5 | | 21.3 | 28.1 | | 12.9 | | | 17.9 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 13.0 | | | 22.1 | | | 12.9 | | | 17.9 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.0 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 64.6% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰↱ | |
| Volume (vph) | 75 | 430 | 24 | 19 | 189 | 8 | 41 | 228 | 73 | 18 | 53 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1658 | 1392 | | 1584 | 1497 | | 1755 | 1390 | | 1656 | |
| Flt Permitted | | 0.91 | 1.00 | | 0.82 | 1.00 | | 0.95 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1527 | 1392 | | 1304 | 1497 | | 1677 | 1390 | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 453 | 25 | 20 | 199 | 8 | 43 | 240 | 77 | 19 | 56 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 39 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 532 | 15 | 0 | 219 | 3 | 0 | 283 | 38 | 0 | 91 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 540 | 493 | | 461 | 530 | | 826 | 684 | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.01 | | 0.17 | 0.00 | | c0.17 | 0.03 | | 0.06 | |
| v/c Ratio | | 0.99 | 0.03 | | 0.48 | 0.01 | | 0.34 | 0.06 | | 0.12 | |
| Uniform Delay, d1 | | 20.8 | 13.7 | | 16.3 | 13.6 | | 10.1 | 8.6 | | 8.9 | |
| Progression Factor | | 1.60 | 1.95 | | 1.05 | 1.10 | | 0.30 | 0.27 | | 1.17 | |
| Incremental Delay, d2 | | 33.7 | 0.1 | | 3.4 | 0.0 | | 0.8 | 0.1 | | 0.3 | |
| Delay (s) | | 67.0 | 26.8 | | 20.6 | 15.0 | | 3.9 | 2.5 | | 10.7 | |
| Level of Service | | E | C | | C | B | | A | A | | B | |
| Approach Delay (s) | | 65.2 | | | 20.4 | | | 3.6 | | | 10.7 | |
| Approach LOS | | E | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 34.7 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 76.1% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 444 | 21 | 31 | 9 | 18 | 15 | 26 | 352 | 19 | 8 | 229 | 169 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.98 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1754 | 1390 | | 1758 | | | 1979 | | | 1873 | 1328 |
| Flt Permitted | | 0.73 | 1.00 | | 0.90 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1338 | 1390 | | 1608 | | | 1932 | | | 1852 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 493 | 23 | 34 | 10 | 20 | 17 | 29 | 391 | 21 | 9 | 254 | 188 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 13 | 0 | 0 | 3 | 0 | 0 | 0 | 95 |
| Lane Group Flow (vph) | 0 | 516 | 19 | 0 | 34 | 0 | 0 | 438 | 0 | 0 | 263 | 93 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 607 | 577 | | 421 | | | 951 | | | 912 | 654 |
| v/s Ratio Prot | | c0.10 | | | | | | | | | | |
| v/s Ratio Perm | | 0.25 | 0.01 | | 0.02 | | | c0.23 | | | 0.14 | 0.07 |
| v/c Ratio | | 0.85 | 0.03 | | 0.08 | | | 0.46 | | | 0.29 | 0.14 |
| Uniform Delay, d1 | | 17.2 | 11.3 | | 18.1 | | | 10.8 | | | 9.8 | 9.0 |
| Progression Factor | | 1.05 | 1.62 | | 1.00 | | | 0.62 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 7.9 | 0.1 | | 0.4 | | | 1.5 | | | 0.8 | 0.5 |
| Delay (s) | | 25.9 | 18.3 | | 18.5 | | | 8.2 | | | 10.6 | 9.5 |
| Level of Service | | C | B | | B | | | A | | | B | A |
| Approach Delay (s) | | 25.4 | | | 18.5 | | | 8.2 | | | 10.1 | |
| Approach LOS | | C | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 79.5% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 889 | 222 | 268 | 1124 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4313 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4313 | | 309 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 936 | 234 | 282 | 1183 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 56 |
| Lane Group Flow (vph) | 0 | 1128 | 0 | 282 | 1183 | 0 | 0 | 0 | 0 | 234 | 397 | 154 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 41.2 | | 58.9 | 57.4 | | | | | 20.6 | 20.6 | 20.6 |
| Effective Green, g (s) | | 41.2 | | 58.9 | 57.4 | | | | | 20.6 | 20.6 | 20.6 |
| Actuated g/C Ratio | | 0.46 | | 0.65 | 0.64 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1974 | | 369 | 2057 | | | | | 325 | 621 | 310 |
| v/s Ratio Prot | | 0.26 | | c0.10 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.40 | | | | | | c0.16 | 0.15 | 0.11 |
| v/c Ratio | | 0.57 | | 0.76 | 0.58 | | | | | 0.72 | 0.64 | 0.50 |
| Uniform Delay, d1 | | 17.9 | | 18.6 | 9.3 | | | | | 32.0 | 31.3 | 30.2 |
| Progression Factor | | 1.00 | | 0.71 | 0.66 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.2 | | 5.6 | 0.7 | | | | | 7.7 | 2.3 | 1.5 |
| Delay (s) | | 19.1 | | 18.7 | 6.9 | | | | | 39.7 | 33.6 | 31.7 |
| Level of Service | | B | | B | A | | | | | D | C | C |
| Approach Delay (s) | | 19.1 | | | 9.2 | | | 0.0 | | | 34.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 101.7% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 311 | 853 | 0 | 0 | 843 | 234 | 549 | 365 | 422 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4409 | | | | |
| Flt Permitted | 0.16 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 489 | 3138 | | | 3119 | 1449 | | 4409 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 898 | 0 | 0 | 887 | 246 | 578 | 384 | 444 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 138 | 0 | 73 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 898 | 0 | 0 | 887 | 108 | 0 | 1333 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | Perm | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 46.4 | 46.4 | | | 33.4 | 33.4 | | 31.6 | | | | |
| Effective Green, g (s) | 46.4 | 46.4 | | | 33.4 | 33.4 | | 31.6 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.37 | 0.37 | | 0.35 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 441 | 1618 | | | 1157 | 538 | | 1548 | | | | |
| v/s Ratio Prot | 0.06 | c0.29 | | | 0.28 | | | | | | | |
| v/s Ratio Perm | c0.32 | | | | | 0.07 | | 0.30 | | | | |
| v/c Ratio | 0.74 | 0.56 | | | 0.77 | 0.20 | | 0.89dl | | | | |
| Uniform Delay, d1 | 15.2 | 14.8 | | | 24.9 | 19.2 | | 27.2 | | | | |
| Progression Factor | 1.35 | 0.59 | | | 0.47 | 0.23 | | 1.00 | | | | |
| Incremental Delay, d2 | 5.6 | 1.1 | | | 3.8 | 0.6 | | 5.6 | | | | |
| Delay (s) | 26.2 | 9.9 | | | 15.4 | 5.0 | | 32.8 | | | | |
| Level of Service | C | A | | | B | A | | C | | | | |
| Approach Delay (s) | | 14.2 | | | 13.2 | | | 32.8 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 20.8 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.77 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 90.0 | | | Sum of lost time (s) | | | 12.0 | | | | |
| Intersection Capacity Utilization | | 101.7% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 105 | 581 | 226 | 78 | 784 | 44 | 226 | 178 | 40 | 49 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1293 | 1603 | 3232 | | 1447 | 3009 | | 1544 | 2784 | |
| Flt Permitted | 0.20 | 1.00 | 1.00 | 0.34 | 1.00 | | 0.51 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 328 | 3061 | 1293 | 579 | 3232 | | 780 | 3009 | | 990 | 2784 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 612 | 238 | 82 | 825 | 46 | 238 | 187 | 42 | 52 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 114 | 0 | 4 | 0 | 0 | 22 | 0 | 0 | 78 | 0 |
| Lane Group Flow (vph) | 111 | 612 | 124 | 82 | 867 | 0 | 238 | 207 | 0 | 52 | 135 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 43.7 | 34.7 | 46.8 | 40.3 | 33.0 | | 32.5 | 26.3 | | 19.6 | 16.9 | |
| Effective Green, g (s) | 43.7 | 34.7 | 46.8 | 40.3 | 33.0 | | 32.5 | 26.3 | | 19.6 | 16.9 | |
| Actuated g/C Ratio | 0.49 | 0.39 | 0.52 | 0.45 | 0.37 | | 0.36 | 0.29 | | 0.22 | 0.19 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 283 | 1180 | 672 | 342 | 1185 | | 371 | 879 | | 232 | 523 | |
| v/s Ratio Prot | c0.04 | 0.20 | 0.02 | 0.02 | c0.27 | | c0.09 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.15 | | 0.07 | 0.09 | | | c0.15 | | | 0.04 | | |
| v/c Ratio | 0.39 | 0.52 | 0.18 | 0.24 | 0.73 | | 0.64 | 0.24 | | 0.22 | 0.26 | |
| Uniform Delay, d1 | 25.0 | 21.2 | 11.5 | 19.5 | 24.7 | | 22.1 | 24.2 | | 28.5 | 31.2 | |
| Progression Factor | 0.89 | 0.54 | 0.43 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.1 | 1.2 | 0.1 | 0.4 | 4.0 | | 3.8 | 0.5 | | 0.5 | 0.9 | |
| Delay (s) | 25.2 | 12.7 | 5.0 | 19.9 | 28.7 | | 25.8 | 24.7 | | 29.0 | 32.1 | |
| Level of Service | C | B | A | B | C | | C | C | | C | C | |
| Approach Delay (s) | | 12.2 | | | 27.9 | | | 25.3 | | | 31.5 | |
| Approach LOS | | B | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 9.5 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013


| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 228 | 286 | 59 | 190 | 102 | 329 | 382 | 75 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2871 | | 1463 | 3032 | | 1589 | 3245 | | 1549 | 3135 | |
| Flt Permitted | 0.54 | 1.00 | | 0.32 | 1.00 | | 0.46 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 924 | 2871 | | 490 | 3032 | | 772 | 3245 | | 778 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 240 | 301 | 62 | 200 | 107 | 346 | 402 | 79 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 206 | 0 | 0 | 64 | 0 | 0 | 15 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 335 | 0 | 62 | 243 | 0 | 346 | 466 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 362 | 785 | | 233 | 832 | | 530 | 1295 | | 340 | 935 | |
| v/s Ratio Prot | 0.01 | c0.12 | | c0.02 | 0.08 | | c0.11 | 0.14 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.07 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.18 | 0.43 | | 0.27 | 0.29 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 31.4 | | 24.1 | 30.1 | | 16.6 | 22.1 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 1.7 | | 0.7 | 0.9 | | 3.0 | 0.8 | | 0.5 | 1.0 | |
| Delay (s) | 24.1 | 33.1 | | 24.8 | 30.9 | | 19.6 | 22.9 | | 22.9 | 29.7 | |
| Level of Service | C | C | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 32.1 | | | 29.9 | | | 21.5 | | | 28.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 69.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 169 | 546 | 81 | 6 | 445 | 125 | 68 | 602 | 7 | 144 | 326 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2912 | | | 2887 | | 1437 | 3186 | | 1451 | 2787 | |
| Flt Permitted | | 0.60 | | | 0.95 | | 0.33 | 1.00 | | 0.25 | 1.00 | |
| Satd. Flow (perm) | | 1766 | | | 2732 | | 495 | 3186 | | 389 | 2787 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 607 | 90 | 7 | 494 | 139 | 76 | 669 | 8 | 160 | 362 | 117 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 34 | 0 | 0 | 1 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 873 | 0 | 0 | 606 | 0 | 76 | 676 | 0 | 160 | 437 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 37.0 | | | 29.0 | | 28.0 | 22.0 | | 24.0 | 20.0 | |
| Effective Green, g (s) | | 37.0 | | | 29.0 | | 28.0 | 22.0 | | 24.0 | 20.0 | |
| Actuated g/C Ratio | | 0.49 | | | 0.39 | | 0.37 | 0.29 | | 0.32 | 0.27 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 932 | | | 1056 | | 260 | 935 | | 181 | 743 | |
| v/s Ratio Prot | | c0.05 | | | | | c0.02 | 0.21 | | c0.05 | 0.16 | |
| v/s Ratio Perm | | c0.41 | | | 0.22 | | 0.09 | | | c0.24 | | |
| v/c Ratio | | 0.94 | | | 0.57 | | 0.29 | 0.72 | | 0.88 | 0.59 | |
| Uniform Delay, d1 | | 17.9 | | | 18.1 | | 15.9 | 23.8 | | 22.9 | 23.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 17.7 | | | 2.3 | | 2.8 | 4.8 | | 42.0 | 3.4 | |
| Delay (s) | | 35.6 | | | 20.4 | | 18.7 | 28.6 | | 64.9 | 27.3 | |
| Level of Service | | D | | | C | | B | C | | E | C | |
| Approach Delay (s) | | 35.6 | | | 20.4 | | | 27.6 | | | 36.7 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.94 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 81.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 225 | 48 | 73 | 159 | 13 | 38 | 661 | 93 | 10 | 378 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1898 | | 1615 | 1943 | | 1658 | 3202 | | 1138 | 3197 | |
| Flt Permitted | 0.65 | 1.00 | | 0.52 | 1.00 | | 0.50 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 1132 | 1898 | | 891 | 1943 | | 870 | 3202 | | 359 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 232 | 49 | 75 | 164 | 13 | 39 | 681 | 96 | 10 | 390 | 46 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 4 | 0 | 0 | 17 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 54 | 269 | 0 | 75 | 173 | 0 | 39 | 760 | 0 | 10 | 422 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 418 | 701 | | 329 | 717 | | 415 | 1527 | | 171 | 1525 | |
| v/s Ratio Prot | c0.14 | | | 0.09 | | | c0.24 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.08 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.13 | 0.38 | | 0.23 | 0.24 | | 0.09 | 0.50 | | 0.06 | 0.28 | |
| Uniform Delay, d1 | 13.6 | 15.1 | | 14.1 | 14.2 | | 9.3 | 11.7 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.6 | 1.6 | | 1.6 | 0.8 | | 0.4 | 1.2 | | 0.7 | 0.5 | |
| Delay (s) | 14.2 | 16.7 | | 15.7 | 15.0 | | 9.8 | 12.8 | | 9.8 | 10.7 | |
| Level of Service | B | B | | B | B | | A | B | | A | B | |
| Approach Delay (s) | 16.3 | | | 15.2 | | | 12.7 | | | 10.7 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.45 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 62.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|-------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 631 | 194 | 621 | 17 | 3 | 14 | 3 | 47 | 22 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | 4.0 | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | 1.00 | 1.00 | | | | 0.91 | | | 0.97 | | |
| Flt Protected | 1.00 | 0.95 | 1.00 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | 1477 | 1580 | | | | 1732 | | | 1897 | | |
| Flt Permitted | 1.00 | 0.21 | 1.00 | | | | 0.94 | | | 0.82 | | |
| Satd. Flow (perm) | 2956 | 327 | 1580 | | | | 1652 | | | 1622 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 664 | 204 | 654 | 18 | 3 | 15 | 3 | 49 | 23 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 37 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 664 | 204 | 670 | 0 | 0 | 0 | 33 | 0 | 0 | 26 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | Perm | | Perm | Perm | | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 15.0 | 36.0 | 36.0 | | | | 15.0 | | | 15.0 | | |
| Effective Green, g (s) | 15.0 | 36.0 | 36.0 | | | | 15.0 | | | 15.0 | | |
| Actuated g/C Ratio | 0.25 | 0.60 | 0.60 | | | | 0.25 | | | 0.25 | | |
| Clearance Time (s) | 5.0 | 4.0 | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 739 | 522 | 948 | | | | 413 | | | 406 | | |
| v/s Ratio Prot | c0.22 | 0.11 | 0.42 | | | | | | | | | |
| v/s Ratio Perm | | 0.12 | | | | | c0.02 | | | 0.02 | | |
| v/c Ratio | 0.90 | 0.39 | 0.71 | | | | 0.08 | | | 0.06 | | |
| Uniform Delay, d1 | 21.8 | 6.7 | 8.3 | | | | 17.2 | | | 17.1 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 16.0 | 2.2 | 4.4 | | | | 0.4 | | | 0.3 | | |
| Delay (s) | 37.7 | 8.9 | 12.8 | | | | 17.6 | | | 17.5 | | |
| Level of Service | D | A | B | | | | B | | | B | | |
| Approach Delay (s) | 37.7 | | 11.9 | | | | 17.6 | | | 17.5 | | |
| Approach LOS | D | | B | | | | B | | | B | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 26.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.64 | | |
| Actuated Cycle Length (s) | 60.0 | Sum of lost time (s) | 13.0 |
| Intersection Capacity Utilization | 79.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

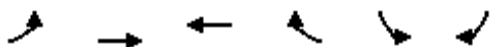


| | |
|------------------------|-------|
| Movement | NER |
| Lane Configurations | |
| Volume (vph) | 344 |
| Ideal Flow (vphpl) | 1800 |
| Lane Width | 12 |
| Total Lost time (s) | 4.0 |
| Lane Util. Factor | 1.00 |
| Frpb, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.86 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1428 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1428 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 362 |
| RTOR Reduction (vph) | 0 |
| Lane Group Flow (vph) | 362 |
| Confl. Peds. (#/hr) | |
| Confl. Bikes (#/hr) | |
| Heavy Vehicles (%) | 9% |
| Turn Type | Over |
| Protected Phases | 7 |
| Permitted Phases | |
| Actuated Green, G (s) | 17.0 |
| Effective Green, g (s) | 17.0 |
| Actuated g/C Ratio | 0.28 |
| Clearance Time (s) | 4.0 |
| Lane Grp Cap (vph) | 405 |
| v/s Ratio Prot | c0.25 |
| v/s Ratio Perm | |
| v/c Ratio | 0.89 |
| Uniform Delay, d1 | 20.6 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 24.7 |
| Delay (s) | 45.3 |
| Level of Service | D |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 194 | 917 | 678 | 81 | 101 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3229 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.63 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2062 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 216 | 1019 | 753 | 90 | 112 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1235 | 829 | 0 | 112 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1269 | 1972 | | 426 | 381 |
| v/s Ratio Prot | | | 0.26 | | c0.07 | |
| v/s Ratio Perm | | c0.60 | | | | 0.03 |
| v/c Ratio | | 0.97 | 0.42 | | 0.26 | 0.12 |
| Uniform Delay, d1 | | 12.0 | 6.5 | | 19.0 | 18.3 |
| Progression Factor | | 1.00 | 0.66 | | 0.92 | 0.91 |
| Incremental Delay, d2 | | 19.6 | 0.6 | | 1.5 | 0.6 |
| Delay (s) | | 31.6 | 4.9 | | 19.1 | 17.3 |
| Level of Service | | C | A | | B | B |
| Approach Delay (s) | | 31.6 | 4.9 | | 18.0 | |
| Approach LOS | | C | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 20.4 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.76 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 71.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↰ | ↱ |
| Volume (vph) | 53 | 938 | 697 | 217 | 174 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.96 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2912 | | 1464 | 1373 |
| Flt Permitted | | 0.86 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2514 | 2912 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 987 | 734 | 228 | 183 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 0 | 1043 | 917 | 0 | 183 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1470 | 1702 | | 428 | 401 |
| v/s Ratio Prot | | | 0.31 | | 0.12 | |
| v/s Ratio Perm | | 0.41 | | | | 0.01 |
| v/c Ratio | | 0.71 | 0.54 | | 0.43 | 0.04 |
| Uniform Delay, d1 | | 9.6 | 8.2 | | 18.6 | 16.5 |
| Progression Factor | | 0.89 | 1.00 | | 1.12 | 1.82 |
| Incremental Delay, d2 | | 1.2 | 1.2 | | 3.0 | 0.2 |
| Delay (s) | | 9.7 | 9.4 | | 23.9 | 30.2 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 9.7 | 9.4 | | 25.4 | |
| Approach LOS | | A | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 11.3 | | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | 0.62 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 76.8% | | ICU Level of Service | | D |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| | → | ↘ | ↙ | ← | ↖ | ↗ |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | ↖ | ↗ | ↖ | ↗ |
| Volume (vph) | 964 | 160 | 167 | 672 | 423 | 323 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.98 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2239 | | 1771 | 2436 | 1844 | 1469 |
| Flt Permitted | 1.00 | | 0.08 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2239 | | 149 | 2436 | 1844 | 1469 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 984 | 163 | 170 | 686 | 432 | 330 |
| RTOR Reduction (vph) | 7 | 0 | 0 | 0 | 0 | 147 |
| Lane Group Flow (vph) | 1140 | 0 | 170 | 686 | 432 | 183 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | | | pm+pt | | | Perm |
| Protected Phases | 4 | | 3 | 8 | 2 | |
| Permitted Phases | | | 8 | | | 2 |
| Actuated Green, G (s) | 47.0 | | 56.0 | 56.0 | 24.0 | 24.0 |
| Effective Green, g (s) | 47.0 | | 56.0 | 56.0 | 24.0 | 24.0 |
| Actuated g/C Ratio | 0.52 | | 0.62 | 0.62 | 0.27 | 0.27 |
| Clearance Time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 1169 | | 201 | 1516 | 492 | 392 |
| v/s Ratio Prot | c0.51 | | c0.06 | 0.28 | c0.23 | |
| v/s Ratio Perm | | | 0.47 | | | 0.12 |
| v/c Ratio | 0.98 | | 0.85 | 0.45 | 0.88 | 0.47 |
| Uniform Delay, d1 | 20.9 | | 22.6 | 8.9 | 31.6 | 27.6 |
| Progression Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 21.1 | | 33.2 | 1.0 | 19.4 | 3.9 |
| Delay (s) | 42.0 | | 55.8 | 9.9 | 51.0 | 31.6 |
| Level of Service | D | | E | A | D | C |
| Approach Delay (s) | 42.0 | | | 19.0 | 42.6 | |
| Approach LOS | D | | | B | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 35.1 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.94 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 13.0 |
| Intersection Capacity Utilization | | | 96.2% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

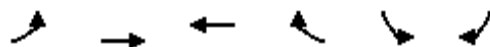
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 725 | 89 | 258 | 1167 | 9 | 72 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.21 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.70 | |
| Satd. Flow (perm) | 422 | 3213 | 1422 | 448 | 3138 | 1366 | | 1309 | 1443 | | 719 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 806 | 99 | 287 | 1297 | 10 | 80 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 0 | 2 | 0 | 0 | 182 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 806 | 53 | 287 | 1297 | 8 | 0 | 80 | 26 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 45.6 | 45.6 | 45.6 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Effective Green, g (s) | 45.6 | 45.6 | 45.6 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.54 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 226 | 1724 | 763 | 589 | 2451 | 1067 | | 163 | 180 | | 90 | |
| v/s Ratio Prot | | 0.25 | | 0.10 | c0.41 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.28 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.47 | 0.07 | 0.49 | 0.53 | 0.01 | | 0.49 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.2 | 12.2 | 9.5 | 3.9 | 3.5 | 2.0 | | 34.7 | 33.2 | | 32.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.9 | 0.2 | 0.6 | 0.2 | 0.0 | | 2.3 | 0.4 | | 0.0 | |
| Delay (s) | 9.2 | 13.1 | 9.7 | 4.6 | 3.7 | 2.1 | | 37.0 | 33.5 | | 32.7 | |
| Level of Service | A | B | A | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 12.7 | | | 3.8 | | | 34.5 | | | 32.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.9 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 52.4% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 820 | 856 | 45 | 24 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1482 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2834 | 3017 | | 1482 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 911 | 951 | 50 | 27 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 925 | 997 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 66.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 66.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.73 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1039 | 2212 | | 115 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.45 | | 0.24 | |
| Uniform Delay, d1 | | 26.8 | 4.8 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.4 | 0.2 | | 4.9 | |
| Delay (s) | | 38.2 | 0.2 | | 44.0 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 38.2 | 0.2 | | 44.0 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.65 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 23.0 |
| Intersection Capacity Utilization | | | 44.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 88 | 435 | 1 | 27 | 584 | 80 | 0 | 0 | 1 | 45 | 3 | 128 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1728 | | | 3233 | | | 1427 | | | 1606 | 1277 |
| Flt Permitted | | 0.77 | | | 0.92 | | | 1.00 | | | 0.90 | 1.00 |
| Satd. Flow (perm) | | 1345 | | | 2996 | | | 1427 | | | 1513 | 1277 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 98 | 483 | 1 | 30 | 649 | 89 | 0 | 0 | 1 | 50 | 3 | 142 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 101 |
| Lane Group Flow (vph) | 0 | 582 | 0 | 0 | 757 | 0 | 0 | 0 | 0 | 0 | 53 | 41 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 44.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 44.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.49 | | | 0.58 | | | 0.10 | | | 0.26 | 0.29 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 658 | | | 1752 | | | 143 | | | 401 | 369 |
| v/s Ratio Prot | | | | | c0.04 | | | 0.00 | | | c0.02 | |
| v/s Ratio Perm | | c0.43 | | | 0.21 | | | | | | c0.01 | 0.03 |
| v/c Ratio | | 0.88 | | | 0.43 | | | 0.00 | | | 0.13 | 0.11 |
| Uniform Delay, d1 | | 20.7 | | | 10.7 | | | 36.5 | | | 25.8 | 23.5 |
| Progression Factor | | 1.00 | | | 0.92 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 16.0 | | | 0.2 | | | 0.0 | | | 0.7 | 0.6 |
| Delay (s) | | 36.7 | | | 10.1 | | | 36.5 | | | 26.5 | 24.1 |
| Level of Service | | D | | | B | | | D | | | C | C |
| Approach Delay (s) | | 36.7 | | | 10.1 | | | 36.5 | | | 24.8 | |
| Approach LOS | | D | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 73.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 29 | 48 | 23 | 24 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.94 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1808 | | | 1703 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1636 | | | 1627 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 31 | 51 | 24 | 25 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 87 | 0 | 0 | 120 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 579 | | | 576 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.05 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.15 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.3 | | | 14.6 | |
| Progression Factor | 1.00 | 1.00 | | 0.69 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.5 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.1 | 19.1 | | | 14.9 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.7 | | | 14.9 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 56 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 59 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 33 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.11 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.4 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.32 | 0.75 | 1.68 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.5 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.5 | | 5.0 | 12.1 | 22.9 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | C | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.6 | | | 0.0 | | | 55.2 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 53.2% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|--------|
| Lane Configurations | ↔↔ | ↕↕ | | ↔ | ↕↕ | ↔ | | ↕↕ | ↔ | ↔ | | ↔ |
| Volume (vph) | 340 | 815 | 220 | 54 | 593 | 287 | 102 | 251 | 55 | 54 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1363 | 855 | | 738 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 624 | 302 | 107 | 264 | 58 | 57 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 0 | 228 | 0 | 0 | 41 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1071 | 0 | 57 | 624 | 74 | 0 | 371 | 17 | 57 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Effective Green, g (s) | 41.0 | 65.0 | | 8.0 | 32.0 | 32.0 | | 29.0 | 29.0 | 10.0 | | 10.0 |
| Actuated g/C Ratio | 0.32 | 0.50 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.08 | | 0.08 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1036 | 1631 | | 105 | 772 | 251 | | 736 | 304 | 66 | | 57 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.20 | | | c0.11 | | c0.07 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.35 | 0.66 | | 0.54 | 0.81 | 0.30 | | 0.50 | 0.06 | 0.86 | | 0.04 |
| Uniform Delay, d1 | 34.2 | 24.2 | | 59.2 | 46.1 | 39.8 | | 44.2 | 39.7 | 59.3 | | 55.6 |
| Progression Factor | 0.94 | 0.18 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.6 | 1.3 | | 18.7 | 8.9 | 3.0 | | 2.5 | 0.3 | 65.1 | | 0.3 |
| Delay (s) | 32.7 | 5.7 | | 77.9 | 55.0 | 42.8 | | 44.3 | 39.7 | 124.4 | | 55.9 |
| Level of Service | C | A | | E | E | D | | D | D | F | | E |
| Approach Delay (s) | | 12.4 | | | 52.6 | | | 43.7 | | | 99.8 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 893 | 181 | 105 | 839 | 0 | 89 | 0 | 103 | 9 | 18 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.96 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2987 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1870 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2987 | | 291 | 3149 | | 1079 | | 1451 | 1803 | 1870 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 201 | 117 | 932 | 0 | 99 | 0 | 114 | 10 | 20 | 8 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1176 | 0 | 117 | 932 | 0 | 99 | 0 | 37 | 10 | 23 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1792 | | 175 | 1889 | | 345 | | 464 | | 577 | 598 |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | c0.40 | | | c0.09 | | 0.03 | | 0.01 | |
| v/c Ratio | | 0.66 | | 0.67 | 0.49 | | 0.29 | | 0.08 | | 0.02 | 0.04 |
| Uniform Delay, d1 | | 13.2 | | 13.4 | 11.4 | | 25.5 | | 23.7 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.9 | | 18.5 | 0.9 | | 2.1 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 15.1 | | 31.8 | 12.3 | | 27.5 | | 24.1 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 15.1 | | | 14.5 | | | 25.7 | | | | 23.5 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street








1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|--------|---|---|---|--|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 300 | 0 | 1230 | 211 | 670 | 0 | 0 | 789 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4270 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 306 | 0 | 1255 | 215 | 684 | 0 | 0 | 805 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 306 | 0 | 1255 | 215 | 684 | 0 | 0 | 1305 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.46 | 0.25 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.5 | | 37.5 | 29.5 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.09 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.7 | | 848.6 | 2.7 | 0.2 | | | 34.8 | |
| Delay (s) | | | | 40.3 | | 886.1 | 21.6 | 18.2 | | | 71.8 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 720.3 | | | 19.0 | | | 71.8 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 328.1 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 101.8% | | | ICU Level of Service | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|--------|------|------|------|----------------------|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 145 | 0 | 0 | 0 | 0 | 559 | 408 | 359 | 730 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 149 | 0 | 0 | 0 | 0 | 576 | 421 | 370 | 753 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 962 | 0 | 0 | 0 | 0 | 0 | 576 | 421 | 370 | 753 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.13 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.49 | 0.70 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.5 | | | | | | 32.5 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.17 | 1.17 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.2 | | | | | | 1.3 | 5.8 | 4.9 | 0.1 | |
| Delay (s) | 35.5 | 51.7 | | | | | | 39.4 | 46.4 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 47.9 | | | 0.0 | | | 42.3 | | | 12.9 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.7 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 101.8% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013








| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 158 | 0 | 0 | 147 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 979 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 176 | 0 | 0 | 163 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 176 | 0 | 0 | 168 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 636 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.10 | | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | 0.02 | 0.16 | | | 0.16 | |
| Uniform Delay, d1 | | | | 24.5 | 20.0 | | 10.5 | 8.0 | | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.04 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.9 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 29.4 | 20.1 | | 11.0 | 9.7 | | | 10.1 | |
| Level of Service | | | | C | C | | B | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 28.0 | | | 9.8 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|-------|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 143 | 41 | 46 | 391 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1720 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1720 | | 1004 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 151 | 43 | 48 | 412 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 182 | 0 | 48 | 412 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 809 | | 639 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.11 | | 0.01 | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.22 | | 0.08 | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.3 | | 8.6 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.97 | 0.86 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.0 | | 8.5 | 8.9 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 14.0 | | | 8.8 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 41.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 48 | 43 | 16 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1751 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1751 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 48 | 18 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 69 | 0 | 18 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.02 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.56 | 0.66 | 1.40 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.8 | 5.4 | 12.4 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 5.2 | 12.4 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.5 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.1% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue

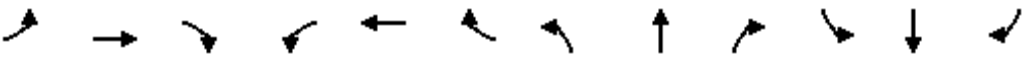
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 161 | 4 | 0 | 301 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1677 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.45 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 809 | 1677 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 179 | 4 | 0 | 334 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 182 | 0 | 0 | 334 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 589 | 1006 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.11 | | | 0.19 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.49 | 0.18 | | | 0.43 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 14.4 | 7.6 | | | 16.1 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.9 | 0.4 | | | 1.7 | 0.0 |
| Delay (s) | | | | | 23.1 | | 17.2 | 8.0 | | | 17.8 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.7 | | | 17.6 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 217 | 30 | 59 | 704 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3290 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3290 | | 1048 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 241 | 33 | 66 | 782 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 260 | 0 | 66 | 825 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1491 | | 634 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.2 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.3 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.3 | | 8.6 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.6 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 285 | 24 | 159 | 591 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3174 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 598 | 3174 | | 996 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 300 | 25 | 167 | 622 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 317 | 0 | 167 | 667 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 558 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.18 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.1 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.6 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.3 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013

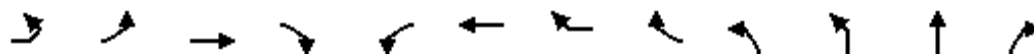


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 261 | 589 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 290 | 654 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 171 | 193 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.8 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.31 | 0.34 | 0.71 | 0.49 | |
| Capacity (veh/h) | 589 | 528 | 546 | 601 | 620 | |
| Control Delay (s) | 12.7 | 11.3 | 11.4 | 21.0 | 12.8 | |
| Approach Delay (s) | 12.7 | 11.3 | | 17.6 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 54.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013



| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
|------------------------|------|-------|-------|------|------|-------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 32 | 35 | 373 | 18 | 20 | 393 | 70 | 78 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1611 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3251 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 936 | 1731 | 1421 | | | 257 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 414 | 20 | 22 | 437 | 78 | 87 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 38 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 414 | 8 | 22 | 437 | 127 | 0 | 0 | 137 | 422 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 302 | 725 | 641 | 223 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.25 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.02 | | 0.09 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.57 | 0.01 | 0.10 | 1.06 | 0.38 | | | 1.99 | 0.49 | |
| Uniform Delay, d1 | | 21.6 | 23.3 | 17.8 | 31.2 | 40.0 | 33.5 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.0 | 3.3 | 0.0 | 0.9 | 61.3 | 3.2 | | | 491.0 | 2.0 | |
| Delay (s) | | 23.5 | 26.5 | 17.9 | 32.1 | 101.3 | 36.6 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.8 | | | 81.8 | | | | | 154.2 | |
| Approach LOS | | | C | | | F | | | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 146.1 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.43 | | |
| Actuated Cycle Length (s) | 105.0 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 103.0% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 107 | 571 | 82 | 103 | 4 | 113 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.37 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 670 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 634 | 91 | 114 | 4 | 126 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 119 | 827 | 0 | 0 | 0 | 130 | 867 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 175 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.08 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.33 | |
| v/c Ratio | 0.68 | 0.97 | | | | 0.39 | 1.69 | |
| Uniform Delay, d1 | 34.8 | 38.4 | | | | 36.8 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 19.3 | 25.0 | | | | 3.4 | 317.6 | |
| Delay (s) | 54.1 | 63.4 | | | | 40.2 | 359.9 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 62.2 | | | | 319.3 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 596 | 0 | 0 | 469 | 56 | 85 | 52 | 19 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1952 | | | 1841 | | | | |
| Flt Permitted | | 0.91 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1530 | | | 1952 | | | 1841 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 662 | 0 | 0 | 521 | 62 | 94 | 58 | 21 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 734 | 0 | 0 | 583 | 0 | 0 | 173 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 942 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | c0.48 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.78 | | | 0.49 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.2 | | | 6.9 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.3 | | | 1.4 | | | 2.1 | | | | |
| Delay (s) | | 15.6 | | | 8.3 | | | 21.7 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 15.6 | | | 8.3 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 334 | 152 | 129 | 331 | 135 | 105 | 639 | 86 | 140 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.93 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1981 | 1443 | | 1949 | 1457 | 1547 | 3040 | 1285 | 1506 | 3069 | 1239 |
| Flt Permitted | | 0.65 | 1.00 | | 0.73 | 1.00 | 0.19 | 1.00 | 1.00 | 0.22 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1292 | 1443 | | 1439 | 1457 | 305 | 3040 | 1285 | 347 | 3069 | 1239 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 352 | 160 | 136 | 348 | 142 | 111 | 673 | 91 | 147 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 79 | 0 | 0 | 81 | 0 | 0 | 55 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 0 | 427 | 81 | 0 | 484 | 61 | 111 | 673 | 36 | 147 | 799 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 53.0 | 53.0 | | 45.0 | 45.0 | 39.0 | 33.0 | 33.0 | 43.0 | 35.0 | 35.0 |
| Effective Green, g (s) | | 53.0 | 53.0 | | 45.0 | 45.0 | 39.0 | 33.0 | 33.0 | 43.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | | 0.50 | 0.50 | | 0.43 | 0.43 | 0.37 | 0.31 | 0.31 | 0.41 | 0.33 | 0.33 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 685 | 728 | | 617 | 624 | 184 | 955 | 404 | 230 | 1023 | 413 |
| v/s Ratio Prot | | c0.03 | | | | | 0.03 | 0.22 | | c0.05 | c0.26 | |
| v/s Ratio Perm | | 0.29 | 0.06 | | c0.34 | 0.04 | 0.19 | | 0.03 | 0.21 | | 0.04 |
| v/c Ratio | | 0.62 | 0.11 | | 0.78 | 0.10 | 0.60 | 0.70 | 0.09 | 0.64 | 0.78 | 0.12 |
| Uniform Delay, d1 | | 18.8 | 13.6 | | 25.8 | 17.9 | 23.7 | 31.7 | 25.4 | 21.8 | 31.5 | 24.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.51 | 1.35 | 2.10 |
| Incremental Delay, d2 | | 4.2 | 0.3 | | 9.7 | 0.3 | 5.5 | 4.4 | 0.4 | 5.5 | 5.7 | 0.6 |
| Delay (s) | | 23.0 | 13.9 | | 35.5 | 18.2 | 29.2 | 36.1 | 25.8 | 38.5 | 48.2 | 51.5 |
| Level of Service | | C | B | | D | B | C | D | C | D | D | D |
| Approach Delay (s) | | 20.6 | | | 31.6 | | | 34.1 | | | 47.1 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.4 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 14.0 | | |
| Intersection Capacity Utilization | | | 90.2% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 412 | 85 | 105 | 490 | 94 | 51 | 61 | 72 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1644 | | | 1646 | | | 1796 | | | | |
| Flt Permitted | | 0.83 | | | 0.84 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1375 | | | 1390 | | | 1796 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 458 | 94 | 117 | 544 | 104 | 57 | 68 | 80 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 636 | 0 | 0 | 756 | 0 | 0 | 170 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 846 | | | 855 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.46 | | | 0.54 | | | 0.09 | | | | |
| v/c Ratio | | 0.75 | | | 0.88 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.0 | | | 10.5 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.1 | | | 12.9 | | | 2.1 | | | | |
| Delay (s) | | 15.1 | | | 23.5 | | | 21.7 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 15.1 | | | 23.5 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 19.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.73 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 71.1% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 21 | 455 | 73 | 84 | 568 | 45 | 37 | 76 | 74 | 56 | 238 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1687 | 1382 | | 1712 | 1417 | | 1686 | 1455 | | 1886 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.88 | 1.00 | | 0.83 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1630 | 1382 | | 1519 | 1417 | | 1430 | 1455 | | 1775 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 479 | 77 | 88 | 598 | 47 | 39 | 80 | 78 | 59 | 251 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 33 | 0 | 0 | 13 | 0 | 0 | 53 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 501 | 44 | 0 | 686 | 34 | 0 | 119 | 25 | 0 | 352 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 935 | 792 | | 871 | 812 | | 458 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.31 | 0.03 | | 0.45 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.54 | 0.06 | | 0.79 | 0.04 | | 0.26 | 0.05 | | 0.62 | |
| Uniform Delay, d1 | | 9.9 | 7.1 | | 12.4 | 7.0 | | 18.9 | 17.6 | | 21.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.2 | 0.1 | | 7.1 | 0.1 | | 1.4 | 0.2 | | 5.0 | |
| Delay (s) | | 12.1 | 7.2 | | 19.6 | 7.1 | | 20.3 | 17.9 | | 26.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 11.4 | | | 18.8 | | | 19.3 | | | 26.6 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.73 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 99.6% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 57 | 463 | 30 | 53 | 598 | 58 | 44 | 165 | 57 | 124 | 210 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1537 | 3068 | | 1652 | 3732 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.31 | 1.00 | | 0.41 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 505 | 3068 | | 716 | 3732 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 63 | 514 | 33 | 59 | 664 | 64 | 49 | 183 | 63 | 138 | 233 | 36 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 11 | 0 | 0 | 0 | 38 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 63 | 540 | 0 | 59 | 717 | 0 | 49 | 183 | 25 | 138 | 233 | 14 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 241 | 1463 | | 341 | 1780 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | 0.18 | | | c0.19 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.08 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.26 | 0.37 | | 0.17 | 0.40 | | 0.13 | 0.28 | 0.05 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.2 | 10.8 | | 9.7 | 11.0 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.82 | 0.89 | 0.70 | 0.58 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.6 | 0.7 | | 1.1 | 0.7 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.8 | 11.5 | | 10.8 | 11.7 | | 10.8 | 12.7 | 8.6 | 9.9 | 9.3 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.6 | | | 11.6 | | | 11.5 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 73 | 389 | 71 | 73 | 387 | 77 | 55 | 197 | 64 | 135 | 272 | 162 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3142 | | 1515 | 3108 | | 1583 | 2928 | | 1453 | 2920 | |
| Flt Permitted | 0.44 | 1.00 | | 0.44 | 1.00 | | 0.44 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 617 | 3142 | | 708 | 3108 | | 741 | 2928 | | 892 | 2920 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 77 | 409 | 75 | 77 | 407 | 81 | 58 | 207 | 67 | 142 | 286 | 171 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 100 | 0 |
| Lane Group Flow (vph) | 77 | 484 | 0 | 77 | 488 | 0 | 58 | 235 | 0 | 142 | 357 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 296 | 1508 | | 340 | 1492 | | 306 | 1210 | | 369 | 1207 | |
| v/s Ratio Prot | | 0.15 | | | c0.16 | | | 0.08 | | | 0.12 | |
| v/s Ratio Perm | 0.12 | | | 0.11 | | | 0.08 | | | c0.16 | | |
| v/c Ratio | 0.26 | 0.32 | | 0.23 | 0.33 | | 0.19 | 0.19 | | 0.38 | 0.30 | |
| Uniform Delay, d1 | 11.6 | 12.0 | | 11.4 | 12.0 | | 14.0 | 14.0 | | 15.3 | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.1 | 0.6 | | 1.5 | 0.6 | | 1.4 | 0.4 | | 3.0 | 0.6 | |
| Delay (s) | 13.7 | 12.5 | | 12.9 | 12.6 | | 15.4 | 14.4 | | 18.4 | 15.3 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 12.7 | | | 12.7 | | | 14.6 | | | 16.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 53.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 108 | 453 | 62 | 32 | 523 | 48 | 86 | 203 | 60 | 76 | 473 | 111 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1653 | | 1371 | 1973 | | 1534 | 2998 | | 1535 | 3011 | |
| Flt Permitted | 0.24 | 1.00 | | 0.30 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 402 | 1653 | | 427 | 1973 | | 450 | 2998 | | 939 | 3011 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 114 | 477 | 65 | 34 | 551 | 51 | 91 | 214 | 63 | 80 | 498 | 117 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 114 | 542 | 0 | 34 | 602 | 0 | 91 | 277 | 0 | 80 | 615 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 272 | 725 | | 238 | 829 | | 204 | 698 | | 329 | 701 | |
| v/s Ratio Prot | c0.02 | c0.33 | | 0.01 | 0.31 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.19 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.42 | 0.75 | | 0.14 | 0.73 | | 0.45 | 0.40 | | 0.24 | 0.88 | |
| Uniform Delay, d1 | 24.1 | 19.9 | | 20.7 | 20.6 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 6.9 | | 0.3 | 5.5 | | 1.6 | 1.7 | | 0.4 | 14.5 | |
| Delay (s) | 25.2 | 26.8 | | 21.0 | 26.1 | | 30.8 | 29.2 | | 22.2 | 46.0 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 26.6 | | | 25.8 | | | 29.6 | | | 43.2 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 80.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

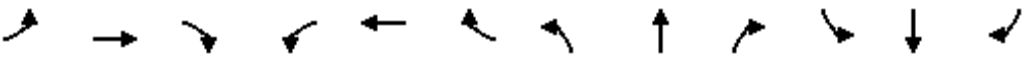
BRT Alternative Mitigated (2030) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 85 | 389 | 65 | 117 | 509 | 118 | 67 | 158 | 58 | 127 | 367 | 83 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3680 | | | 3131 | | 1652 | 3237 | | 1549 | 3026 | |
| Flt Permitted | | 0.68 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2535 | | | 2275 | | 736 | 3237 | | 983 | 3026 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 432 | 72 | 130 | 566 | 131 | 74 | 176 | 64 | 141 | 408 | 92 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 598 | 0 | 0 | 827 | 0 | 74 | 240 | 0 | 141 | 500 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1149 | | | 1031 | | 324 | 1424 | | 433 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.17 | |
| v/s Ratio Perm | | 0.24 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.52 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.38 | |
| Uniform Delay, d1 | | 14.7 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.7 | | | 6.6 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 16.4 | | | 24.2 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 16.4 | | | 24.2 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 875 | 6 | 20 | 584 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 648 | 3206 | | 433 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 972 | 7 | 22 | 649 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 979 | 0 | 22 | 649 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 406 | 2008 | | 271 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | c0.31 | | | 0.20 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.8 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.2 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | 8.2 | | | 6.6 | | | | 20.0 | | | 24.0 | |
| Approach LOS | A | | | A | | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.46 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 73.6 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 125 | 94 | 163 | 57 | 148 | 907 | 90 | 129 | 825 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1584 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.20 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 740 | 1504 | | 337 | 1584 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 132 | 99 | 172 | 60 | 156 | 955 | 95 | 136 | 868 | 105 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 138 | 349 | 0 | 99 | 217 | 0 | 156 | 955 | 55 | 136 | 868 | 56 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 284 | 389 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.05 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.27 | | 0.04 | 0.26 | | 0.04 |
| v/c Ratio | 0.49 | 0.90 | | 0.52 | 0.53 | | 0.67 | 0.76 | 0.10 | 0.64 | 0.68 | 0.10 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.1 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.82 | 0.55 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.9 | | 9.9 | 4.8 | | 13.2 | 3.8 | 0.3 | 13.8 | 2.9 | 0.4 |
| Delay (s) | 28.5 | 56.3 | | 32.7 | 31.9 | | 23.0 | 21.2 | 8.7 | 28.8 | 23.4 | 15.7 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.8 | | | 32.1 | | | 20.5 | | | 23.3 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 74.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 38 | 20 | 173 | 22 | 43 | 149 | 40 | 45 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1835 | | | 1848 | | | 1937 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1781 | | | 1790 | | | 1755 | | | 1869 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 39 | 21 | 178 | 23 | 44 | 154 | 41 | 46 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 11 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 238 | 0 | 0 | 216 | 0 | 0 | 228 | 0 | 0 | 352 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 810 | | | 863 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.13 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.28 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.8 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.73 | | | 1.27 | | | 1.00 | |
| Incremental Delay, d2 | | 1.2 | | | 1.0 | | | 0.8 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 10.2 | | | 14.5 | | | 13.0 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 10.2 | | | 14.5 | | | 13.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | | B | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 49.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 39 | 25 | 180 | 20 | 53 | 200 | 31 | 47 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3057 | | 1577 | 3116 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 965 | 3057 | | 984 | 3116 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 43 | 28 | 200 | 22 | 59 | 222 | 34 | 52 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 59 | 242 | 0 | 52 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 911 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.11 | 0.13 | | 0.09 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.96 | | 0.74 | 0.73 | | 1.40 | 1.44 | | 0.39 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.3 | 17.6 | | 13.0 | 13.3 | | 8.8 | 8.9 | | 2.7 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.5 | | | 13.3 | | | 8.9 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.0 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 42 | 25 | 159 | 38 | 27 | 262 | 16 | 42 | 337 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2937 | | | 1923 | | | 1939 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3056 | | 973 | 2937 | | | 1825 | | | 1832 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 47 | 28 | 177 | 42 | 30 | 291 | 18 | 47 | 374 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 206 | 0 | 28 | 194 | 0 | 0 | 336 | 0 | 0 | 453 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1222 | | 389 | 1175 | | | 870 | | | 874 | |
| v/s Ratio Prot | 0.07 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.18 | | | c0.25 | | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.39 | | | 0.52 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.9 | | | 11.8 | |
| Progression Factor | 1.03 | 0.98 | | 0.80 | 0.80 | | | 1.12 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.2 | |
| Delay (s) | 14.1 | 12.6 | | 10.0 | 10.3 | | | 13.3 | | | 14.0 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 13.0 | | | 10.3 | | | 13.3 | | | 14.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.9 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.37 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 30 | 20 | 161 | 27 | 45 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1966 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.89 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1966 | | 1082 | 1975 | | | 1774 | | | 1911 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 33 | 22 | 179 | 30 | 50 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 156 | 0 | 22 | 209 | 0 | 0 | 323 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 605 | | 333 | 608 | | | 1010 | | | 1088 | |
| v/s Ratio Prot | 0.08 | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.26 | | 0.07 | 0.34 | | | 0.32 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.4 | | | 8.2 | |
| Progression Factor | 0.84 | 0.81 | | 0.84 | 0.88 | | | 0.80 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 15.0 | 14.8 | | 13.8 | 16.8 | | | 6.7 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 14.8 | | | 16.5 | | | 6.7 | | | 9.6 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.1% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.39 | 2.72 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 1.0 | 0.7 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.7 | 47.8 | | 17.1 | 17.1 | | 6.8 | 6.8 | 5.2 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.5 | | | 17.1 | | | 6.8 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 253 | 163 | 170 | 204 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 179 | 215 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 179 | 215 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.10 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.32 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.4 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.18 | 2.12 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.3 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 30.5 | 23.6 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 26.7 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 297 | 113 | 77 | 539 | 231 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.37 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 645 | 3196 | | | 2847 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 313 | 119 | 81 | 567 | 243 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 167 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 393 | 0 | 81 | 567 | 76 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 706 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.54 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.2 | 8.0 | | | 32.8 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 2.9 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 4.9 | 3.6 | | | 35.7 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 35.7 | | | 73.2 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 512 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 11 | 434 | 277 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3098 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3098 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 533 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 289 |
| RTOR Reduction (vph) | 0 | 170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Lane Group Flow (vph) | 0 | 862 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 98 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.06 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.77 | | 0.22 | 0.29 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 28.4 | | 14.4 | 10.6 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.2 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 33.6 | | 15.5 | 12.9 | | | | | 22.0 | 26.6 | 24.1 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.6 | | | 13.2 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.9% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 417 | 106 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2291 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 430 | 109 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 215 | 324 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1463 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.2 | 3.6 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.8 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 28.4 | | | HCM Level of Service | | | | | C | | | |
| HCM Volume to Capacity ratio | 0.54 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 100.0 | | | Sum of lost time (s) | | | | | 12.0 | | | |
| Intersection Capacity Utilization | 91.9% | | | ICU Level of Service | | | | | F | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 78 | 218 | 103 | 121 | 265 | 125 | 84 | 699 | 79 | 103 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2939 | | | 2922 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.74 | | | 0.75 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2182 | | | 2204 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 227 | 107 | 126 | 276 | 130 | 88 | 728 | 82 | 107 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 41 | 0 | 0 | 37 | 0 | 0 | 0 | 50 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 374 | 0 | 0 | 495 | 0 | 88 | 728 | 32 | 107 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 978 | | | 726 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.14 | | | c0.22 | | 0.20 | | 0.02 | 0.18 | | 0.03 |
| v/c Ratio | | 0.38 | | | 0.68 | | 0.53 | 0.60 | 0.06 | 0.48 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.9 | | | 24.6 | | 16.7 | 20.5 | 16.3 | 16.0 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.69 | 0.61 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.1 | | | 5.1 | | 10.4 | 2.0 | 0.2 | 5.3 | 3.1 | 0.2 |
| Delay (s) | | 18.0 | | | 29.8 | | 32.4 | 16.2 | 10.1 | 23.0 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 18.0 | | | 29.8 | | | 17.2 | | | 28.4 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 73.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 318 | 0 | 0 | 389 | 103 | 53 | 44 | 37 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1698 | | | 1650 | | | | |
| Flt Permitted | | 0.83 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1458 | | | 1698 | | | 1650 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 353 | 0 | 0 | 432 | 114 | 59 | 49 | 41 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 437 | 0 | 0 | 531 | 0 | 0 | 128 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 852 | | | 993 | | | 482 | | | | |
| v/s Ratio Prot | | | | | c0.31 | | | | | | | |
| v/s Ratio Perm | | 0.30 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.51 | | | 0.54 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 8.0 | | | 8.2 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.99 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.2 | | | 1.6 | | | 1.3 | | | | |
| Delay (s) | | 10.2 | | | 9.7 | | | 19.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.2 | | | 9.7 | | | 19.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 68.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 19 | 306 | 27 | 53 | 416 | 70 | 28 | 118 | 42 | 57 | 150 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1957 | | | 1933 | | | 2959 | | | 2985 | |
| Flt Permitted | | 0.96 | | | 0.93 | | | 0.89 | | | 0.85 | |
| Satd. Flow (perm) | | 1887 | | | 1810 | | | 2658 | | | 2572 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 21 | 340 | 30 | 59 | 462 | 78 | 31 | 131 | 47 | 63 | 167 | 47 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 8 | 0 | 0 | 27 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 386 | 0 | 0 | 591 | 0 | 0 | 182 | 0 | 0 | 251 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 871 | | | 835 | | | 1104 | | | 1068 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | | | 0.33 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.44 | | | 0.71 | | | 0.16 | | | 0.23 | |
| Uniform Delay, d1 | | 11.8 | | | 14.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.57 | | | 0.37 | | | 1.24 | | | 0.46 | |
| Incremental Delay, d2 | | 1.4 | | | 4.1 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 8.2 | | | 9.3 | | | 15.1 | | | 6.1 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 8.2 | | | 9.3 | | | 15.1 | | | 6.1 | |
| Approach LOS | | A | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 9.2 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.48 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 83.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 41 | 279 | 39 | 85 | 551 | 100 | 43 | 219 | 99 | 86 | 227 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1512 | 3039 | | 1570 | 3078 | | 1587 | 2961 | | 1585 | 3075 | |
| Flt Permitted | 0.25 | 1.00 | | 0.52 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 395 | 3039 | | 854 | 3078 | | 931 | 2961 | | 902 | 3075 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 310 | 43 | 94 | 612 | 111 | 48 | 243 | 110 | 96 | 252 | 69 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 22 | 0 | 0 | 51 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 46 | 336 | 0 | 94 | 701 | 0 | 48 | 302 | 0 | 96 | 289 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 134 | 1029 | | 289 | 1042 | | 501 | 1594 | | 486 | 1656 | |
| v/s Ratio Prot | | 0.11 | | | c0.23 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.11 | | | 0.05 | | | c0.11 | | |
| v/c Ratio | 0.34 | 0.33 | | 0.33 | 0.67 | | 0.10 | 0.19 | | 0.20 | 0.17 | |
| Uniform Delay, d1 | 16.1 | 16.0 | | 16.0 | 18.4 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.81 | 0.76 | | 1.16 | 1.18 | | 1.11 | 1.24 | | 1.08 | 1.08 | |
| Incremental Delay, d2 | 6.4 | 0.8 | | 2.9 | 3.4 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 19.5 | 13.0 | | 21.4 | 25.1 | | 8.5 | 9.8 | | 9.3 | 8.5 | |
| Level of Service | B | B | | C | C | | A | A | | A | A | |
| Approach Delay (s) | | 13.7 | | | 24.6 | | | 9.7 | | | 8.6 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 54.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 287 | 96 | 107 | 401 | 50 | 165 | 250 | 131 | 46 | 295 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.98 | | | 1.00 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.96 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1508 | 2988 | | 1430 | 3720 | | | 3405 | | | 3530 | |
| Flt Permitted | 0.46 | 1.00 | | 0.51 | 1.00 | | | 0.69 | | | 0.85 | |
| Satd. Flow (perm) | 726 | 2988 | | 761 | 3720 | | | 2401 | | | 3027 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 58 | 302 | 101 | 113 | 422 | 53 | 174 | 263 | 138 | 48 | 311 | 67 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 15 | 0 | 0 | 46 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 58 | 353 | 0 | 113 | 460 | 0 | 0 | 529 | 0 | 0 | 403 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 346 | 1425 | | 363 | 1774 | | | 960 | | | 1211 | |
| v/s Ratio Prot | | 0.12 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | c0.15 | | | | c0.22 | | | 0.13 | |
| v/c Ratio | 0.17 | 0.25 | | 0.31 | 0.26 | | | 0.55 | | | 0.33 | |
| Uniform Delay, d1 | 9.7 | 10.1 | | 10.4 | 10.1 | | | 15.0 | | | 13.5 | |
| Progression Factor | 1.54 | 1.77 | | 1.09 | 1.06 | | | 1.00 | | | 0.76 | |
| Incremental Delay, d2 | 1.0 | 0.4 | | 2.0 | 0.3 | | | 2.3 | | | 0.7 | |
| Delay (s) | 15.9 | 18.3 | | 13.4 | 11.1 | | | 17.3 | | | 10.9 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | | 18.0 | | | 11.5 | | | 17.3 | | | 10.9 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.42 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 64.0% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰↱ | | | ↰↱ | | | ↰↱ | |
| Volume (vph) | 86 | 311 | 86 | 92 | 297 | 92 | 119 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1671 | 1436 | | 3088 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.78 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1346 | 1436 | | 2425 | | | 1305 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 346 | 96 | 102 | 330 | 102 | 132 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 31 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 442 | 50 | 0 | 503 | 0 | 0 | 262 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 704 | 751 | | 1268 | | | 422 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.03 | | 0.21 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.63 | 0.07 | | 0.40 | | | 0.62 | | | 0.41 | |
| Uniform Delay, d1 | | 11.0 | 7.7 | | 9.3 | | | 18.6 | | | 17.2 | |
| Progression Factor | | 1.41 | 3.19 | | 0.53 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 4.0 | 0.2 | | 0.9 | | | 6.7 | | | 2.3 | |
| Delay (s) | | 19.6 | 24.6 | | 5.9 | | | 25.4 | | | 19.5 | |
| Level of Service | | B | C | | A | | | C | | | B | |
| Approach Delay (s) | | 20.5 | | | 5.9 | | | 25.4 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 80.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 291 | 32 | 26 | 328 | 60 | 27 | 133 | 47 | 62 | 146 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | | 0.97 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1444 | 3021 | | 1566 | 3019 | | | 3583 | | | 3595 | |
| Flt Permitted | 0.48 | 1.00 | | 0.54 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 735 | 3021 | | 883 | 3019 | | | 3230 | | | 3066 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 323 | 36 | 29 | 364 | 67 | 30 | 148 | 52 | 69 | 162 | 72 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 66 | 346 | 0 | 29 | 408 | 0 | 0 | 200 | 0 | 0 | 261 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 339 | 1394 | | 408 | 1393 | | | 1342 | | | 1274 | |
| v/s Ratio Prot | | 0.11 | | | c0.14 | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.03 | | | | 0.06 | | | c0.09 | |
| v/c Ratio | 0.19 | 0.25 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.4 | 10.6 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.65 | 0.64 | | 1.00 | 1.00 | | | 0.93 | | | 0.41 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.5 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.7 | 7.2 | | 10.1 | 11.4 | | | 11.3 | | | 5.3 | |
| Level of Service | A | A | | B | B | | | B | | | A | |
| Approach Delay (s) | | 7.3 | | | 11.3 | | | 11.3 | | | 5.3 | |
| Approach LOS | | A | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 8.8 | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 56.8% | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 456 | 30 | 86 | 507 | 222 | 25 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3278 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.75 | | | 0.77 | | | 0.87 | | | 0.69 | |
| Satd. Flow (perm) | | 2472 | | | 2447 | | | 2703 | | | 2253 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 507 | 33 | 96 | 563 | 247 | 28 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 49 | 0 | 0 | 67 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 587 | 0 | 0 | 857 | 0 | 0 | 227 | 0 | 0 | 746 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | | | 32.0 | | | 38.0 | | | 30.0 | |
| Effective Green, g (s) | | 32.0 | | | 32.0 | | | 38.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.48 | | | 0.38 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 989 | | | 979 | | | 1308 | | | 845 | |
| v/s Ratio Prot | | | | | | | | c0.01 | | | | |
| v/s Ratio Perm | | 0.24 | | | c0.35 | | | 0.07 | | | c0.33 | |
| v/c Ratio | | 0.59 | | | 0.88 | | | 0.17 | | | 0.97dl | |
| Uniform Delay, d1 | | 18.9 | | | 22.2 | | | 12.0 | | | 23.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.6 | | | 10.9 | | | 0.3 | | | 12.9 | |
| Delay (s) | | 21.5 | | | 33.0 | | | 12.3 | | | 36.2 | |
| Level of Service | | C | | | C | | | B | | | D | |
| Approach Delay (s) | | 21.5 | | | 33.0 | | | 12.3 | | | 36.2 | |
| Approach LOS | | C | | | C | | | B | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 28.9 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.85 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 80.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 86.4% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 899 | 138 | 48 | 794 | 0 | 82 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3037 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3037 | | | 2483 | | | 1328 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 999 | 153 | 53 | 882 | 0 | 91 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1135 | 0 | 0 | 935 | 0 | 0 | 113 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 5 6 11 | | | 8 | | | 2 | | | 2 | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | | 67.0 | | | 33.0 | | | 14.0 | | | | |
| Effective Green, g (s) | | 60.0 | | | 33.0 | | | 14.0 | | | | |
| Actuated g/C Ratio | | 0.67 | | | 0.37 | | | 0.16 | | | | |
| Clearance Time (s) | | | | | 5.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | | 2025 | | | 910 | | | 207 | | | | |
| v/s Ratio Prot | | c0.37 | | | | | | | | | | |
| v/s Ratio Perm | | | | | c0.38 | | | c0.09 | | | | |
| v/c Ratio | | 0.56 | | | 1.03 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 8.0 | | | 28.5 | | | 35.1 | | | | |
| Progression Factor | | 0.20 | | | 1.35 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.1 | | | 35.8 | | | 10.0 | | | | |
| Delay (s) | | 1.7 | | | 74.3 | | | 45.1 | | | | |
| Level of Service | | A | | | E | | | D | | | | |
| Approach Delay (s) | | 1.7 | | | 74.3 | | | 45.1 | | | 0.0 | |
| Approach LOS | | A | | | E | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.9 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | |
| Intersection Capacity Utilization | | | 75.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 224 | 642 | 24 | 112 | 614 | 185 | 61 | 4 | 107 | 212 | 10 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 471 | 3192 | | 583 | 3320 | 1485 | | 1592 | | 763 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 249 | 713 | 27 | 124 | 682 | 206 | 68 | 4 | 119 | 236 | 11 | 237 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 96 | 0 | 90 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 249 | 738 | 0 | 124 | 682 | 110 | 0 | 101 | 0 | 236 | 11 | 102 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Effective Green, g (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.42 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 452 | 1507 | | 421 | 1409 | 795 | | 214 | | 312 | 487 | 640 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.47 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.3 | | 10.9 | 18.8 | 10.5 | | 36.0 | | 28.6 | 23.5 | 15.6 |
| Progression Factor | 2.70 | 2.08 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.6 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.0 | 0.0 | 0.2 |
| Delay (s) | 26.5 | 34.8 | | 11.4 | 20.0 | 10.6 | | 38.2 | | 38.6 | 23.6 | 15.8 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 32.7 | | | 17.0 | | | 38.2 | | | 27.1 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 61.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|
| |  |  |  |  |  |  |  |  |  |  |  |  | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 | | |
| Pedestrians | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 | | |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | | | |
| Lane LOS | | | | A | | C | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 22.8 | | | | | | | |
| Approach LOS | | | | | | C | | | | | | | | |
| | | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| Average Delay | | | 7.2 | | | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 483 | 64 | 212 | 535 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 574 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 537 | 71 | 236 | 594 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 596 | 0 | 236 | 594 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 452 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.19 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.24 | | | | | | | | |
| v/c Ratio | | 0.45 | | 0.52 | 0.32 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 16.7 | 9.4 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.36 | 0.17 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.3 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.5 | | 9.3 | 1.9 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.5 | | | 4.0 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | HCM Level of Service | | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 46.2% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 489 | 0 | 0 | 684 | 129 | 63 | 90 | 63 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3133 | | | 4497 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 335 | 3320 | | | 3133 | | | 4497 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 543 | 0 | 0 | 760 | 143 | 70 | 100 | 70 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 48 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 543 | 0 | 0 | 885 | 0 | 0 | 192 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 345 | 1875 | | | 1290 | | | 1428 | | | | |
| v/s Ratio Prot | 0.04 | c0.16 | | | c0.28 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.14 | | | | | | | | | | | |
| v/c Ratio | 0.31 | 0.29 | | | 0.69 | | | 0.13 | | | | |
| Uniform Delay, d1 | 19.6 | 9.6 | | | 20.5 | | | 20.7 | | | | |
| Progression Factor | 0.46 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 2.1 | 0.4 | | | 3.0 | | | 0.2 | | | | |
| Delay (s) | 11.1 | 3.3 | | | 23.5 | | | 20.9 | | | | |
| Level of Service | B | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.6 | | | 23.5 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























6/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 358 | 114 | 119 | 426 | 89 | 129 | 78 | 37 | 32 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2979 | | | 3005 | | | 1835 | | | 1770 | |
| Flt Permitted | | 0.62 | | | 0.65 | | | 0.72 | | | 0.94 | |
| Satd. Flow (perm) | | 1874 | | | 1968 | | | 1361 | | | 1676 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 398 | 127 | 132 | 473 | 99 | 143 | 87 | 41 | 36 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 20 | 0 | 0 | 10 | 0 | 0 | 67 | 0 |
| Lane Group Flow (vph) | 0 | 620 | 0 | 0 | 684 | 0 | 0 | 261 | 0 | 0 | 226 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 663 | | | 696 | | | 670 | | | 825 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | 0.35 | | | 0.19 | | | 0.14 | |
| v/c Ratio | | 0.93 | | | 0.98 | | | 0.39 | | | 0.27 | |
| Uniform Delay, d1 | | 20.3 | | | 20.8 | | | 10.4 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 22.2 | | | 30.2 | | | 1.7 | | | 0.8 | |
| Delay (s) | | 42.4 | | | 51.0 | | | 12.1 | | | 10.5 | |
| Level of Service | | D | | | D | | | B | | | B | |
| Approach Delay (s) | | 42.4 | | | 51.0 | | | 12.1 | | | 10.5 | |
| Approach LOS | | D | | | D | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 36.4 | | | HCM Level of Service | | | D | | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 83.8% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 229 | 88 | 199 | 420 | 125 | 124 | 539 | 77 | 110 | 940 | 146 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1562 | 2993 | | 1574 | 3644 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.31 | 1.00 | | 0.50 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 |
| Satd. Flow (perm) | 510 | 2993 | | 836 | 3644 | | 212 | 3069 | 1333 | 545 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 241 | 93 | 209 | 442 | 132 | 131 | 567 | 81 | 116 | 989 | 154 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 33 | 0 | 0 | 0 | 51 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 112 | 286 | 0 | 209 | 541 | 0 | 131 | 567 | 30 | 116 | 989 | 56 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 230 | 986 | | 330 | 1200 | | 181 | 1119 | 486 | 300 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.10 | | c0.03 | 0.15 | | c0.05 | 0.18 | | 0.03 | c0.32 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.26 | | 0.02 | 0.14 | | 0.04 |
| v/c Ratio | 0.49 | 0.29 | | 0.63 | 0.45 | | 0.72 | 0.51 | 0.06 | 0.39 | 0.88 | 0.12 |
| Uniform Delay, d1 | 19.9 | 21.1 | | 22.2 | 22.4 | | 18.0 | 21.0 | 17.5 | 15.6 | 25.2 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.40 | 1.05 | 2.37 |
| Incremental Delay, d2 | 7.2 | 0.7 | | 8.9 | 1.2 | | 22.1 | 1.6 | 0.2 | 2.8 | 7.4 | 0.4 |
| Delay (s) | 27.1 | 21.9 | | 31.2 | 23.7 | | 40.1 | 22.7 | 17.8 | 24.6 | 33.8 | 42.7 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 23.2 | | | 25.7 | | | 25.1 | | | 34.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|------|-------|------|----------------------|------|------|------|-------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 48 | 348 | 30 | 83 | 601 | 84 | 33 | 100 | 53 | 51 | 124 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1965 | 1466 | | 1990 | 1480 | | 2015 | 1506 | | 1995 | 1511 |
| Flt Permitted | | 0.60 | 1.00 | | 0.87 | 1.00 | | 0.91 | 1.00 | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1184 | 1466 | | 1750 | 1480 | | 1857 | 1506 | | 1809 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 51 | 366 | 32 | 87 | 633 | 88 | 35 | 105 | 56 | 54 | 131 | 67 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 47 | 0 | 0 | 33 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 0 | 417 | 15 | 0 | 720 | 41 | 0 | 140 | 23 | 0 | 185 | 28 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 546 | 677 | | 808 | 683 | | 771 | 626 | | 751 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.35 | 0.01 | | c0.41 | 0.03 | | 0.08 | 0.02 | | c0.10 | 0.02 |
| v/c Ratio | | 0.76 | 0.02 | | 0.89 | 0.06 | | 0.18 | 0.04 | | 0.25 | 0.04 |
| Uniform Delay, d1 | | 14.6 | 9.5 | | 16.0 | 9.7 | | 12.0 | 11.3 | | 12.4 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.44 | 0.05 | | 1.05 | 1.21 | | 1.03 | 0.89 |
| Incremental Delay, d2 | | 9.8 | 0.1 | | 12.2 | 0.1 | | 0.5 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | | 24.3 | 9.6 | | 19.2 | 0.7 | | 13.1 | 13.7 | | 13.5 | 10.2 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 23.3 | | | 17.2 | | | 13.3 | | | 12.6 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.7 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 100.4% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 385 | 20 | 51 | 566 | 91 | 10 | 109 | 23 | 125 | 214 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3076 | | 1550 | 3035 | | 1550 | 3017 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.55 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3076 | | 802 | 3035 | | 892 | 3017 | | 1074 | 2991 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 428 | 22 | 57 | 629 | 101 | 11 | 121 | 26 | 139 | 238 | 72 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 15 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 444 | 0 | 57 | 710 | 0 | 11 | 132 | 0 | 139 | 268 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1514 | | 271 | 1027 | | 371 | 1253 | | 446 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.14 | | | c0.23 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.13 | | |
| v/c Ratio | 0.50 | 0.29 | | 0.21 | 0.69 | | 0.03 | 0.11 | | 0.31 | 0.22 | |
| Uniform Delay, d1 | 27.3 | 9.8 | | 15.3 | 18.6 | | 11.2 | 11.6 | | 12.8 | 12.2 | |
| Progression Factor | 1.16 | 0.56 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.11 | 1.10 | |
| Incremental Delay, d2 | 8.6 | 0.4 | | 1.8 | 3.8 | | 0.1 | 0.2 | | 1.8 | 0.4 | |
| Delay (s) | 40.3 | 5.9 | | 17.1 | 22.4 | | 11.4 | 11.8 | | 15.9 | 13.8 | |
| Level of Service | D | A | | B | C | | B | B | | B | B | |
| Approach Delay (s) | | 11.2 | | | 22.0 | | | 11.8 | | | 14.4 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 49.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 267 | 166 | 247 | 330 | 63 | 412 | 300 | 189 | 55 | 295 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2921 | | 1550 | 3025 | | | 3144 | | | 3236 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.63 | | | 0.71 | |
| Satd. Flow (perm) | 813 | 2921 | | 1550 | 3025 | | | 2030 | | | 2306 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 297 | 184 | 274 | 367 | 70 | 458 | 333 | 210 | 61 | 328 | 56 |
| RTOR Reduction (vph) | 0 | 107 | 0 | 0 | 18 | 0 | 0 | 27 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 71 | 374 | 0 | 274 | 419 | 0 | 0 | 974 | 0 | 0 | 432 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 15.0 | 15.0 | | 17.0 | 35.0 | | | 44.0 | | | 44.0 | |
| Effective Green, g (s) | 15.0 | 15.0 | | 17.0 | 35.0 | | | 44.0 | | | 44.0 | |
| Actuated g/C Ratio | 0.17 | 0.17 | | 0.19 | 0.39 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 136 | 487 | | 293 | 1176 | | | 992 | | | 1127 | |
| v/s Ratio Prot | c0.13 | | | c0.18 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.48 | | | 0.19 | | |
| v/c Ratio | 0.52 | 0.77 | | 0.94 | 0.36 | | | 1.09dl | | | 0.38 | |
| Uniform Delay, d1 | 34.2 | 35.8 | | 36.0 | 19.5 | | | 22.6 | | | 14.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 13.6 | 11.1 | | 38.3 | 0.8 | | | 24.6 | | | 1.0 | |
| Delay (s) | 47.8 | 46.9 | | 74.3 | 20.4 | | | 47.2 | | | 15.5 | |
| Level of Service | D | D | | E | C | | | D | | | B | |
| Approach Delay (s) | 47.1 | | | 41.1 | | | 47.2 | | | 15.5 | | |
| Approach LOS | D | | | D | | | D | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.4 | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 80.9% | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 75 | 647 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1529 | | | 1466 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 83 | 719 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 880 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 976 | | | 936 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.60 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.94 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.6 | | | 20.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.3 | | | 18.1 | | | 0.9 | | | | |
| Delay (s) | | 9.0 | | | 28.8 | | | 21.2 | | | | |
| Level of Service | | A | | | C | | | C | | | | |
| Approach Delay (s) | | 9.0 | | | 28.8 | | | 21.2 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.2 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

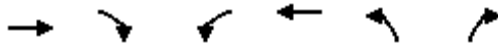


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (veh/h) | 133 | 474 | 615 | 39 | 119 | 174 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 140 | 499 | 647 | 41 | 125 | 183 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.94 | | | | 0.94 | 0.94 |
| vC, conflicting volume | 705 | | | | 1220 | 366 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 571 | | | | 1116 | 212 |
| tC, single (s) | 4.2 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 85 | | | | 22 | 75 |
| cM capacity (veh/h) | 912 | | | | 161 | 742 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | SB 1 | SB 2 |
| Volume Total | 306 | 333 | 432 | 257 | 125 | 183 |
| Volume Left | 140 | 0 | 0 | 0 | 125 | 0 |
| Volume Right | 0 | 0 | 0 | 41 | 0 | 183 |
| cSH | 912 | 1700 | 1700 | 1700 | 161 | 742 |
| Volume to Capacity | 0.15 | 0.20 | 0.25 | 0.15 | 0.78 | 0.25 |
| Queue Length 95th (ft) | 14 | 0 | 0 | 0 | 125 | 24 |
| Control Delay (s) | 5.3 | 0.0 | 0.0 | 0.0 | 79.4 | 11.4 |
| Lane LOS | A | | | | F | B |
| Approach Delay (s) | 2.5 | | 0.0 | | 39.1 | |
| Approach LOS | | | | | E | |
| Intersection Summary | | | | | | |
| Average Delay | | | 8.4 | | | |
| Intersection Capacity Utilization | | | 55.2% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | |
| Volume (vph) | 710 | 0 | 1 | 626 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 789 | 0 | 1 | 696 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 789 | 0 | 0 | 697 | 7 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 70.0 | | | 40.0 | 12.0 | |
| Effective Green, g (s) | 66.0 | | | 40.0 | 12.0 | |
| Actuated g/C Ratio | 0.73 | | | 0.44 | 0.13 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1282 | | | 776 | 203 | |
| v/s Ratio Prot | c0.45 | | | | c0.00 | |
| v/s Ratio Perm | | | | 0.40 | | |
| v/c Ratio | 0.62 | | | 0.90 | 0.04 | |
| Uniform Delay, d1 | 5.8 | | | 23.1 | 34.0 | |
| Progression Factor | 0.05 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | | | 15.3 | 0.3 | |
| Delay (s) | 1.2 | | | 38.5 | 34.3 | |
| Level of Service | A | | | D | C | |
| Approach Delay (s) | 1.2 | | | 38.5 | 34.3 | |
| Approach LOS | A | | | D | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 49.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 253 | 616 | 32 | 410 | 0 | 0 | 0 | 0 | 17 | 6 | 252 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 281 | 684 | 36 | 456 | 0 | 0 | 0 | 0 | 19 | 7 | 280 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 456 | | | 281 | | | 1153 | 1150 | 483 | 667 | 808 | 456 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 456 | | | 281 | | | 1153 | 1150 | 483 | 667 | 808 | 456 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 94 | 98 | 49 |
| cM capacity (veh/h) | 1116 | | | 1264 | | | 73 | 194 | 535 | 341 | 308 | 552 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 187 | 778 | 491 | 26 | 280 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 684 | 0 | 0 | 280 | | | | | | | |
| cSH | 1700 | 1700 | 1264 | 332 | 552 | | | | | | | |
| Volume to Capacity | 0.11 | 0.46 | 0.03 | 0.08 | 0.51 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 71 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.8 | 18.1 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.9 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.6% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | 🚗🚗 | | 🚗 | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 270 | 0 | 442 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 300 | 0 | 491 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 150 | 150 | 491 | | | |
| Volume Left (vph) | 150 | 150 | 491 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.27 | 0.27 | 0.68 | | | |
| Capacity (veh/h) | 536 | 536 | 697 | | | |
| Control Delay (s) | 10.5 | 10.5 | 18.1 | | | |
| Approach Delay (s) | 10.5 | | 18.1 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.2 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 40.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 501 | 345 | 273 | 661 | 0 | 0 | 0 | 0 | 279 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 527 | 363 | 287 | 696 | 0 | 0 | 0 | 0 | 294 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 527 | 133 | 0 | 983 | 0 | 0 | 0 | 0 | 162 | 558 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 68.1 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1458 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.17 | | | c0.29 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.11 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.68 | 0.44 | | 0.67 | | | | | 0.83 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 54.8 | 51.3 | | 37.0 | | | | | 66.6 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.06 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.8 | 4.7 | | 0.1 | | | | | 24.9 | 43.6 | 0.2 |
| Delay (s) | | 59.6 | 56.0 | | 2.3 | | | | | 91.5 | 112.1 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 58.1 | | | 2.3 | | | 0.0 | | | 91.8 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.9 | | |
| Intersection Capacity Utilization | | | 76.6% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 292 | 488 | 0 | 0 | 602 | 144 | 332 | 214 | 196 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3064 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 542 | 0 | 0 | 669 | 160 | 369 | 238 | 218 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 60 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 542 | 0 | 0 | 669 | 78 | 280 | 485 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 83.9 | 83.9 | | | 37.1 | 37.1 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 842 | 1799 | | | 744 | 344 | 117 | 230 | | | | |
| v/s Ratio Prot | c0.20 | 0.16 | | | c0.21 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | 0.05 | | | | | | | |
| v/c Ratio | 0.38 | 0.30 | | | 0.90 | 0.23 | 2.39 | 2.11 | | | | |
| Uniform Delay, d1 | 22.7 | 21.5 | | | 59.6 | 49.8 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.06 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 13.7 | 0.3 | 652.3 | 513.1 | | | | |
| Delay (s) | 1.4 | 1.3 | | | 73.3 | 50.2 | 726.3 | 587.1 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.4 | | | 68.8 | | 634.4 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 230.8 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.72 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 65.0% | | | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 273 | 136 | 129 | 270 | 107 | 108 | 522 | 80 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1576 | 1600 | 1372 | 1594 | 1766 | | 1578 | 3009 | | 1537 | 3001 | |
| Flt Permitted | 0.26 | 1.00 | 1.00 | 0.41 | 1.00 | | 0.13 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | 438 | 1600 | 1372 | 683 | 1766 | | 216 | 3009 | | 527 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 287 | 143 | 136 | 284 | 113 | 114 | 549 | 84 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 100 | 0 | 16 | 0 | 0 | 13 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 147 | 287 | 43 | 136 | 381 | 0 | 114 | 620 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | | 43.0 | 36.0 | | 40.2 | 34.6 | |
| Effective Green, g (s) | 32.0 | 28.0 | 27.0 | 32.0 | 27.0 | | 41.0 | 36.0 | | 38.2 | 34.6 | |
| Actuated g/C Ratio | 0.35 | 0.31 | 0.30 | 0.35 | 0.30 | | 0.45 | 0.40 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 230 | 494 | 409 | 302 | 526 | | 188 | 1196 | | 273 | 1146 | |
| v/s Ratio Prot | c0.04 | 0.18 | | 0.03 | c0.22 | | c0.04 | 0.21 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.18 | | 0.03 | 0.13 | | | 0.23 | | | 0.15 | | |
| v/c Ratio | 0.64 | 0.58 | 0.10 | 0.45 | 0.72 | | 0.61 | 0.52 | | 0.41 | 0.84 | |
| Uniform Delay, d1 | 22.1 | 26.4 | 23.0 | 21.1 | 28.5 | | 17.4 | 20.7 | | 16.7 | 25.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.7 | 4.9 | 0.5 | 1.1 | 8.4 | | 5.4 | 1.6 | | 1.0 | 7.3 | |
| Delay (s) | 27.8 | 31.3 | 23.5 | 22.2 | 36.9 | | 22.8 | 22.3 | | 17.7 | 32.7 | |
| Level of Service | C | C | C | C | D | | C | C | | B | C | |
| Approach Delay (s) | | 28.5 | | | 33.1 | | | 22.4 | | | 31.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.6 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

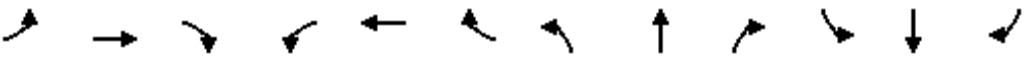
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 39 | 348 | 61 | 73 | 437 | 82 | 37 | 59 | 34 | 36 | 91 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1970 | 1467 | | 1624 | 1381 | | 1868 | | | 1875 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.90 | 1.00 | | 0.90 | | | 0.94 | |
| Satd. Flow (perm) | | 1833 | 1467 | | 1470 | 1381 | | 1700 | | | 1781 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 366 | 64 | 77 | 460 | 86 | 39 | 62 | 36 | 38 | 96 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 32 | 0 | 0 | 36 | 0 | 20 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 0 | 407 | 32 | 0 | 537 | 50 | 0 | 117 | 0 | 0 | 178 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 902 | 722 | | 724 | 680 | | 706 | | | 740 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | 0.02 | | 0.37 | 0.04 | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.45 | 0.04 | | 0.74 | 0.07 | | 0.17 | | | 0.24 | |
| Uniform Delay, d1 | | 10.8 | 8.6 | | 13.2 | 8.7 | | 11.9 | | | 12.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.46 | |
| Incremental Delay, d2 | | 1.6 | 0.1 | | 6.7 | 0.2 | | 0.5 | | | 0.7 | |
| Delay (s) | | 12.4 | 8.7 | | 19.9 | 8.9 | | 12.4 | | | 18.7 | |
| Level of Service | | B | A | | B | A | | B | | | B | |
| Approach Delay (s) | | 11.9 | | | 18.4 | | | 12.4 | | | 18.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.8 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 74.2% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 59 | 259 | 41 | 71 | 472 | 20 | 36 | 114 | 34 | 17 | 184 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1753 | 1459 | | 1725 | 1493 | | 1712 | 1482 | | 1711 | |
| Flt Permitted | | 0.84 | 1.00 | | 0.91 | 1.00 | | 0.89 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 1479 | 1459 | | 1584 | 1493 | | 1543 | 1482 | | 1672 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 273 | 43 | 75 | 497 | 21 | 38 | 120 | 36 | 18 | 194 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 0 | 11 | 0 | 0 | 26 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 21 | 0 | 572 | 10 | 0 | 158 | 10 | 0 | 258 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 22.0 | 22.0 | | 22.0 | 22.0 | | 13.0 | 13.0 | | 13.0 | |
| Effective Green, g (s) | | 22.0 | 22.0 | | 22.0 | 22.0 | | 13.0 | 13.0 | | 13.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.29 | 0.29 | | 0.29 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 723 | 713 | | 774 | 730 | | 446 | 428 | | 483 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.23 | 0.01 | | 0.36 | 0.01 | | 0.10 | 0.01 | | 0.15 | |
| v/c Ratio | | 0.46 | 0.03 | | 0.74 | 0.01 | | 0.35 | 0.02 | | 0.53 | |
| Uniform Delay, d1 | | 7.6 | 6.0 | | 9.2 | 5.9 | | 12.7 | 11.5 | | 13.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.14 | 1.46 | | 1.00 | |
| Incremental Delay, d2 | | 2.1 | 0.1 | | 6.3 | 0.0 | | 1.2 | 0.1 | | 4.2 | |
| Delay (s) | | 9.7 | 6.0 | | 15.5 | 6.0 | | 15.7 | 16.8 | | 17.7 | |
| Level of Service | | A | A | | B | A | | B | B | | B | |
| Approach Delay (s) | | 9.3 | | | 15.1 | | | 15.9 | | | 17.7 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.66 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 45.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 83.2% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 229 | 35 | 76 | 8 | 14 | 11 | 38 | 256 | 8 | 31 | 556 | 531 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1860 | 1440 | | 1765 | | | 1996 | | | 1975 | 1382 |
| Flt Permitted | | 0.76 | 1.00 | | 0.93 | | | 0.81 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1468 | 1440 | | 1657 | | | 1631 | | | 1928 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 254 | 39 | 84 | 9 | 16 | 12 | 42 | 284 | 9 | 34 | 618 | 590 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 201 |
| Lane Group Flow (vph) | 0 | 293 | 35 | 0 | 28 | 0 | 0 | 333 | 0 | 0 | 652 | 389 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 658 | 598 | | 433 | | | 803 | | | 949 | 680 |
| v/s Ratio Prot | | c0.05 | | | | | | | | | | |
| v/s Ratio Perm | | 0.13 | 0.02 | | 0.02 | | | 0.20 | | | c0.34 | 0.28 |
| v/c Ratio | | 0.45 | 0.06 | | 0.06 | | | 0.42 | | | 0.69 | 0.57 |
| Uniform Delay, d1 | | 13.6 | 11.4 | | 18.0 | | | 10.5 | | | 12.7 | 11.7 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | | 0.51 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.2 | 0.2 | | 0.3 | | | 1.1 | | | 4.0 | 3.5 |
| Delay (s) | | 15.8 | 11.6 | | 18.3 | | | 6.5 | | | 16.7 | 15.2 |
| Level of Service | | B | B | | B | | | A | | | B | B |
| Approach Delay (s) | | 14.9 | | | 18.3 | | | 6.5 | | | 16.0 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.2 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 78.4% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 894 | 289 | 375 | 1072 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4573 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4573 | | 190 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 941 | 304 | 395 | 1128 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 76 |
| Lane Group Flow (vph) | 0 | 1200 | 0 | 395 | 1128 | 0 | 0 | 0 | 0 | 308 | 603 | 195 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 43.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 43.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.38 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1730 | | 458 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.26 | | c0.20 | 0.34 | | | | | | | |
| v/s Ratio Perm | | | | c0.36 | | | | | | 0.21 | 0.21 | 0.14 |
| v/c Ratio | | 0.69 | | 0.86 | 0.52 | | | | | 0.85 | 0.85 | 0.55 |
| Uniform Delay, d1 | | 30.1 | | 29.1 | 10.6 | | | | | 41.4 | 41.4 | 38.0 |
| Progression Factor | | 1.00 | | 0.86 | 1.69 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.3 | | 10.4 | 0.6 | | | | | 16.7 | 9.4 | 2.1 |
| Delay (s) | | 32.4 | | 35.5 | 18.5 | | | | | 58.1 | 50.8 | 40.0 |
| Level of Service | | C | | D | B | | | | | E | D | D |
| Approach Delay (s) | | 32.4 | | | 22.9 | | | 0.0 | | | 50.2 | |
| Approach LOS | | C | | | C | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 105.3% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |  | |    | | | | |
| Volume (vph) | 341 | 1066 | 0 | 0 | 1017 | 271 | 430 | 351 | 318 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Flt Permitted | 0.14 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 460 | 3353 | | | 3241 | 1489 | | 4521 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1122 | 0 | 0 | 1071 | 285 | 453 | 369 | 335 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 85 | 0 | 62 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1122 | 0 | 0 | 1071 | 200 | 0 | 1095 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 71.2 | 71.2 | | | 53.0 | 53.0 | | 31.8 | | | | |
| Effective Green, g (s) | 71.2 | 71.2 | | | 53.0 | 53.0 | | 31.8 | | | | |
| Actuated g/C Ratio | 0.62 | 0.62 | | | 0.46 | 0.46 | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 570 | 2076 | | | 1494 | 686 | | 1250 | | | | |
| v/s Ratio Prot | 0.07 | c0.33 | | | c0.33 | | | | | | | |
| v/s Ratio Perm | 0.32 | | | | | 0.13 | | 0.24 | | | | |
| v/c Ratio | 0.63 | 0.54 | | | 0.72 | 0.29 | | 0.88 | | | | |
| Uniform Delay, d1 | 15.3 | 12.5 | | | 25.0 | 19.3 | | 39.7 | | | | |
| Progression Factor | 1.32 | 0.17 | | | 0.98 | 1.25 | | 1.00 | | | | |
| Incremental Delay, d2 | 1.5 | 0.7 | | | 2.2 | 0.8 | | 7.7 | | | | |
| Delay (s) | 21.6 | 2.8 | | | 26.6 | 25.0 | | 47.4 | | | | |
| Level of Service | C | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 7.4 | | | 26.3 | | | 47.4 | | | 0.0 | |
| Approach LOS | | A | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 105.3% | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 671 | 408 | 104 | 779 | 67 | 227 | 179 | 66 | 77 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1601 | 3282 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.38 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 646 | 3282 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 706 | 429 | 109 | 820 | 71 | 239 | 188 | 69 | 81 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 142 | 706 | 256 | 109 | 885 | 0 | 239 | 219 | 0 | 81 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.3 | 68.7 | 43.4 | 34.3 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.3 | 68.7 | 43.4 | 34.3 | | 38.1 | 26.6 | | 26.2 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 426 | 1489 | 784 | 319 | 979 | | 348 | 694 | | 259 | 465 | |
| v/s Ratio Prot | c0.08 | c0.22 | 0.05 | 0.03 | c0.27 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.47 | 0.33 | 0.34 | 0.90 | | 0.69 | 0.32 | | 0.31 | 0.41 | |
| Uniform Delay, d1 | 15.9 | 21.8 | 11.6 | 23.9 | 38.8 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.81 | 0.81 | 2.26 | 1.00 | 1.00 | | 0.98 | 1.02 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.9 | 0.2 | 0.6 | 13.3 | | 5.3 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 14.5 | 18.5 | 26.4 | 24.6 | 52.1 | | 35.3 | 38.2 | | 36.9 | 45.7 | |
| Level of Service | B | B | C | C | D | | D | D | | D | D | |
| Approach Delay (s) | | 20.7 | | | 49.1 | | | 36.8 | | | 43.8 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 75.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & Ashland Avenue

1/14/2013


| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 221 | 367 | 86 | 324 | 113 | 362 | 340 | 81 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 2910 | | 1653 | 3235 | | 1620 | 3405 | | 1580 | 3183 | |
| Flt Permitted | 0.44 | 1.00 | | 0.24 | 1.00 | | 0.32 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 794 | 2910 | | 417 | 3235 | | 544 | 3405 | | 824 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 233 | 386 | 91 | 341 | 119 | 381 | 358 | 85 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 242 | 0 | 0 | 28 | 0 | 0 | 18 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 377 | 0 | 91 | 432 | 0 | 381 | 425 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 39.6 | 32.9 | | 46.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 39.6 | 32.9 | | 46.0 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.34 | 0.29 | | 0.40 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 327 | 833 | | 273 | 1016 | | 454 | 1309 | | 340 | 888 | |
| v/s Ratio Prot | 0.01 | 0.13 | | c0.03 | c0.13 | | c0.15 | 0.12 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | 0.10 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.15 | 0.45 | | 0.33 | 0.43 | | 0.84 | 0.32 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 25.5 | 33.7 | | 23.1 | 31.2 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 0.97 | |
| Incremental Delay, d2 | 0.2 | 1.8 | | 0.9 | 1.3 | | 13.1 | 0.7 | | 3.8 | 2.2 | |
| Delay (s) | 25.7 | 35.4 | | 23.9 | 32.5 | | 33.9 | 25.6 | | 32.1 | 36.2 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 34.7 | | | 31.1 | | | 29.4 | | | 34.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 75.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↕ | ↕↕ | | ↕ | ↕↕ | |
| Volume (vph) | 105 | 644 | 141 | 10 | 543 | 135 | 104 | 287 | 9 | 215 | 609 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3034 | | | 3004 | | 1452 | 3227 | | 1523 | 2871 | |
| Flt Permitted | | 0.65 | | | 0.94 | | 0.17 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | | 1996 | | | 2820 | | 255 | 3227 | | 751 | 2871 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 716 | 157 | 11 | 603 | 150 | 116 | 319 | 10 | 239 | 677 | 203 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 27 | 0 | 0 | 3 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 0 | 971 | 0 | 0 | 737 | 0 | 116 | 326 | 0 | 239 | 845 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 39.0 | | | 31.0 | | 27.0 | 24.0 | | 31.0 | 26.0 | |
| Effective Green, g (s) | | 39.0 | | | 31.0 | | 27.0 | 24.0 | | 31.0 | 26.0 | |
| Actuated g/C Ratio | | 0.49 | | | 0.39 | | 0.34 | 0.30 | | 0.39 | 0.32 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1025 | | | 1093 | | 131 | 968 | | 339 | 933 | |
| v/s Ratio Prot | | c0.05 | | | | | 0.03 | 0.10 | | c0.04 | c0.29 | |
| v/s Ratio Perm | | c0.41 | | | 0.26 | | 0.27 | | | 0.23 | | |
| v/c Ratio | | 0.95 | | | 0.67 | | 0.89 | 0.34 | | 0.71 | 0.91 | |
| Uniform Delay, d1 | | 19.5 | | | 20.3 | | 24.5 | 21.8 | | 20.0 | 25.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 17.9 | | | 3.3 | | 52.6 | 0.9 | | 11.7 | 13.9 | |
| Delay (s) | | 37.4 | | | 23.6 | | 77.1 | 22.7 | | 31.7 | 39.8 | |
| Level of Service | | D | | | C | | E | C | | C | D | |
| Approach Delay (s) | | 37.4 | | | 23.6 | | | 36.9 | | | 38.0 | |
| Approach LOS | | D | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.93 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 80.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.1% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013






| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 67 | 229 | 136 | 123 | 292 | 28 | 72 | 462 | 83 | 35 | 698 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1899 | | 1600 | 2011 | | 1676 | 3218 | | 1435 | 3274 | |
| Flt Permitted | 0.46 | 1.00 | | 0.41 | 1.00 | | 0.29 | 1.00 | | 0.42 | 1.00 | |
| Satd. Flow (perm) | 832 | 1899 | | 686 | 2011 | | 516 | 3218 | | 630 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 236 | 140 | 127 | 301 | 29 | 74 | 476 | 86 | 36 | 720 | 72 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 5 | 0 | 0 | 22 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 69 | 343 | 0 | 127 | 325 | 0 | 74 | 540 | 0 | 36 | 780 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 307 | 701 | | 253 | 743 | | 246 | 1535 | | 300 | 1561 | |
| v/s Ratio Prot | | 0.18 | | | 0.16 | | | 0.17 | | | c0.24 | |
| v/s Ratio Perm | 0.08 | | | c0.19 | | | 0.14 | | | 0.06 | | |
| v/c Ratio | 0.22 | 0.49 | | 0.50 | 0.44 | | 0.30 | 0.35 | | 0.12 | 0.50 | |
| Uniform Delay, d1 | 14.1 | 15.8 | | 15.9 | 15.4 | | 10.4 | 10.7 | | 9.4 | 11.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 2.4 | | 7.0 | 1.9 | | 3.1 | 0.6 | | 0.8 | 1.1 | |
| Delay (s) | 15.8 | 18.2 | | 22.8 | 17.3 | | 13.5 | 11.3 | | 10.2 | 12.8 | |
| Level of Service | B | B | | C | B | | B | B | | B | B | |
| Approach Delay (s) | | 17.8 | | | 18.8 | | | 11.6 | | | 12.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.50 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 73.0% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|---|---|---|------|------|------|---|------|------|---|------|
| Lane Configurations | |  |  |  | | | |  | | |  | |
| Volume (vph) | 2 | 843 | 366 | 786 | 32 | 3 | 10 | 9 | 47 | 12 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 4.0 | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.99 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | 1565 | 1649 | | | | 1811 | | | 1847 | |
| Flt Permitted | | 0.95 | 0.17 | 1.00 | | | | 0.96 | | | 0.87 | |
| Satd. Flow (perm) | | 3013 | 274 | 1649 | | | | 1751 | | | 1656 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 887 | 385 | 827 | 34 | 3 | 11 | 9 | 49 | 13 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 889 | 385 | 859 | 0 | 0 | 0 | 34 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | pm+pt | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 20.0 | 37.0 | 37.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 20.0 | 37.0 | 37.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.33 | 0.62 | 0.62 | | | | 0.23 | | | 0.23 | |
| Clearance Time (s) | | 5.0 | 4.0 | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 1004 | 449 | 1017 | | | | 409 | | | 386 | |
| v/s Ratio Prot | | | 0.19 | c0.52 | | | | | | | | |
| v/s Ratio Perm | | 0.30 | c0.34 | | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 0.89 | 0.86 | 0.84 | | | | 0.08 | | | 0.04 | |
| Uniform Delay, d1 | | 18.9 | 12.7 | 9.2 | | | | 18.0 | | | 17.8 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 11.4 | 18.7 | 8.6 | | | | 0.4 | | | 0.2 | |
| Delay (s) | | 30.3 | 31.4 | 17.8 | | | | 18.4 | | | 18.0 | |
| Level of Service | | C | C | B | | | | B | | | B | |
| Approach Delay (s) | | 30.3 | | 22.0 | | | | 18.4 | | | 18.0 | |
| Approach LOS | | C | | C | | | | B | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 27.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.64 | | |
| Actuated Cycle Length (s) | 60.0 | Sum of lost time (s) | 9.0 |
| Intersection Capacity Utilization | 95.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | SBR2 | NER |
|------------------------|------|------|
| Lane Configurations | | |
| Volume (vph) | 5 | 276 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | | 4.0 |
| Lane Util. Factor | | 1.00 |
| Frpb, ped/bikes | | 1.00 |
| Flpb, ped/bikes | | 1.00 |
| Frt | | 0.86 |
| Flt Protected | | 1.00 |
| Satd. Flow (prot) | | 1557 |
| Flt Permitted | | 1.00 |
| Satd. Flow (perm) | | 1557 |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 291 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 0 | 291 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 0% |
| Turn Type | | Over |
| Protected Phases | | 7 |
| Permitted Phases | | |
| Actuated Green, G (s) | | 13.0 |
| Effective Green, g (s) | | 13.0 |
| Actuated g/C Ratio | | 0.22 |
| Clearance Time (s) | | 4.0 |
| Lane Grp Cap (vph) | | 337 |
| v/s Ratio Prot | | 0.19 |
| v/s Ratio Perm | | |
| v/c Ratio | | 0.86 |
| Uniform Delay, d1 | | 22.6 |
| Progression Factor | | 1.00 |
| Incremental Delay, d2 | | 24.2 |
| Delay (s) | | 46.9 |
| Level of Service | | D |
| Approach Delay (s) | | |
| Approach LOS | | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 264 | 887 | 958 | 132 | 113 | 234 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3283 | 3260 | | 1660 | 1485 |
| Flt Permitted | | 0.53 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1774 | 3260 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 293 | 986 | 1064 | 147 | 126 | 260 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 0 | 139 |
| Lane Group Flow (vph) | 0 | 1279 | 1199 | 0 | 126 | 121 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 67.0 | 67.0 | | 15.0 | 15.0 |
| Effective Green, g (s) | | 67.0 | 67.0 | | 15.0 | 15.0 |
| Actuated g/C Ratio | | 0.74 | 0.74 | | 0.17 | 0.17 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1321 | 2427 | | 277 | 248 |
| v/s Ratio Prot | | | 0.37 | | 0.08 | |
| v/s Ratio Perm | | c0.72 | | | | c0.08 |
| v/c Ratio | | 1.11dl | 0.49 | | 0.45 | 0.49 |
| Uniform Delay, d1 | | 10.5 | 4.6 | | 33.8 | 34.0 |
| Progression Factor | | 1.00 | 1.00 | | 0.99 | 1.05 |
| Incremental Delay, d2 | | 18.2 | 0.7 | | 4.9 | 6.2 |
| Delay (s) | | 28.8 | 5.4 | | 38.4 | 41.9 |
| Level of Service | | C | A | | D | D |
| Approach Delay (s) | | 28.8 | 5.4 | | 40.8 | |
| Approach LOS | | C | A | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 20.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.88 | | |
| Actuated Cycle Length (s) | 90.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 83.0% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013

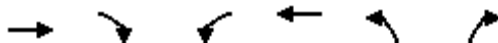


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 81 | 922 | 1006 | 195 | 287 | 88 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3119 | 3112 | | 1506 | 1343 |
| Flt Permitted | | 0.68 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2145 | 3112 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 85 | 971 | 1059 | 205 | 302 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 25 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 0 | 1056 | 1239 | 0 | 302 | 46 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1122 | 1628 | | 533 | 475 |
| v/s Ratio Prot | | | 0.40 | | c0.20 | |
| v/s Ratio Perm | | c0.49 | | | | 0.03 |
| v/c Ratio | | 0.94 | 0.76 | | 0.57 | 0.10 |
| Uniform Delay, d1 | | 14.6 | 12.3 | | 17.0 | 14.0 |
| Progression Factor | | 1.00 | 1.00 | | 1.81 | 3.00 |
| Incremental Delay, d2 | | 16.0 | 3.4 | | 3.4 | 0.3 |
| Delay (s) | | 30.6 | 15.7 | | 34.1 | 42.4 |
| Level of Service | | C | B | | C | D |
| Approach Delay (s) | | 30.6 | 15.7 | | 36.0 | |
| Approach LOS | | C | B | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 24.4 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.79 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 92.1% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue

1/14/2013



























| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | ↩ | ↩ | ↩ | ↩ |
| Volume (vph) | 808 | 261 | 399 | 1090 | 205 | 127 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.97 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2399 | | 1788 | 2506 | 1758 | 1509 |
| Flt Permitted | 1.00 | | 0.09 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2399 | | 163 | 2506 | 1758 | 1509 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.90 | 0.90 | 0.98 | 0.98 |
| Adj. Flow (vph) | 824 | 266 | 443 | 1211 | 209 | 130 |
| RTOR Reduction (vph) | 11 | 0 | 0 | 0 | 0 | 107 |
| Lane Group Flow (vph) | 1079 | 0 | 443 | 1211 | 209 | 23 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | | | pm+pt | | | Perm |
| Protected Phases | 4 | | 3 | 8 | 2 | |
| Permitted Phases | | | 8 | | | 2 |
| Actuated Green, G (s) | 43.1 | | 66.1 | 66.1 | 16.1 | 16.1 |
| Effective Green, g (s) | 43.1 | | 66.1 | 66.1 | 16.1 | 16.1 |
| Actuated g/C Ratio | 0.47 | | 0.72 | 0.72 | 0.17 | 0.17 |
| Clearance Time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1121 | | 469 | 1797 | 307 | 264 |
| v/s Ratio Prot | 0.45 | | c0.20 | 0.48 | c0.12 | |
| v/s Ratio Perm | | | c0.47 | | | 0.02 |
| v/c Ratio | 0.96 | | 0.94 | 0.67 | 0.68 | 0.09 |
| Uniform Delay, d1 | 23.8 | | 28.5 | 7.1 | 35.6 | 31.9 |
| Progression Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 18.5 | | 27.9 | 1.0 | 6.1 | 0.1 |
| Delay (s) | 42.3 | | 56.4 | 8.2 | 41.7 | 32.0 |
| Level of Service | D | | E | A | D | C |
| Approach Delay (s) | 42.3 | | | 21.1 | 38.0 | |
| Approach LOS | D | | | C | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.4 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.87 | | | |
| Actuated Cycle Length (s) | | | 92.2 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 95.3% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   |  |  |   |  | |  |  | |   | |
| Volume (vph) | 1 | 1620 | 38 | 112 | 861 | 1 | 62 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.30 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 592 | 3431 | 1479 | 126 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1800 | 42 | 124 | 957 | 1 | 69 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 142 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1800 | 30 | 124 | 957 | 1 | 0 | 69 | 32 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 50.1 | 50.1 | 50.1 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | | |
| Effective Green, g (s) | 50.1 | 50.1 | 50.1 | 67.7 | 67.7 | 67.7 | | 9.3 | 9.3 | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 349 | 2022 | 872 | 352 | 2644 | 1219 | | 169 | 164 | | | |
| v/s Ratio Prot | | c0.52 | | 0.06 | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.22 | | 0.00 | | c0.04 | 0.02 | | | |
| v/c Ratio | 0.00 | 0.89 | 0.03 | 0.35 | 0.36 | 0.00 | | 0.41 | 0.19 | | | |
| Uniform Delay, d1 | 7.2 | 15.1 | 7.3 | 13.6 | 2.5 | 1.8 | | 35.3 | 34.4 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 6.4 | 0.1 | 0.6 | 0.1 | 0.0 | | 1.6 | 0.6 | | | |
| Delay (s) | 7.2 | 21.5 | 7.4 | 14.2 | 2.6 | 1.8 | | 36.9 | 35.0 | | | |
| Level of Service | A | C | A | B | A | A | | D | D | | | |
| Approach Delay (s) | | 21.1 | | | 3.9 | | | 35.5 | | | 0.0 | |
| Approach LOS | | C | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 68.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 966 | 846 | 30 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2912 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1073 | 940 | 33 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1085 | 970 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 61.0 | | 4.0 | |
| Effective Green, g (s) | | 33.0 | 61.0 | | 4.0 | |
| Actuated g/C Ratio | | 0.37 | 0.68 | | 0.04 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2090 | | 68 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.02 | 0.46 | | 1.28 | |
| Uniform Delay, d1 | | 28.5 | 6.8 | | 43.0 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 31.6 | 0.2 | | 203.3 | |
| Delay (s) | | 60.1 | 0.2 | | 246.3 | |
| Level of Service | | E | A | | F | |
| Approach Delay (s) | | 60.1 | 0.2 | | 246.3 | |
| Approach LOS | | E | A | | F | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 41.2 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.84 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 31.0 |
| Intersection Capacity Utilization | | | 48.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 98 | 520 | 0 | 1 | 589 | 39 | 3 | 2 | 28 | 202 | 0 | 148 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1767 | | | 3342 | | | 1463 | | | 1667 | 1346 |
| Flt Permitted | | 0.79 | | | 0.95 | | | 0.77 | | | 0.86 | 1.00 |
| Satd. Flow (perm) | | 1410 | | | 3192 | | | 1132 | | | 1515 | 1346 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 578 | 0 | 1 | 654 | 43 | 3 | 2 | 31 | 224 | 0 | 164 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 28 | 0 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 0 | 687 | 0 | 0 | 693 | 0 | 0 | 8 | 0 | 0 | 224 | 47 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 40.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 40.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.44 | | | 0.58 | | | 0.10 | | | 0.26 | 0.29 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 627 | | | 1864 | | | 113 | | | 411 | 389 |
| v/s Ratio Prot | | | | | c0.05 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.49 | | | 0.17 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.10 | | | 0.37 | | | 0.07 | | | 0.55 | 0.12 |
| Uniform Delay, d1 | | 25.0 | | | 10.2 | | | 36.7 | | | 29.0 | 23.6 |
| Progression Factor | | 1.00 | | | 0.89 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 64.9 | | | 0.2 | | | 1.2 | | | 5.1 | 0.6 |
| Delay (s) | | 89.9 | | | 9.4 | | | 37.9 | | | 34.1 | 24.2 |
| Level of Service | | F | | | A | | | D | | | C | C |
| Approach Delay (s) | | 89.9 | | | 9.4 | | | 37.9 | | | 29.9 | |
| Approach LOS | | F | | | A | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 44.9 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 81.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

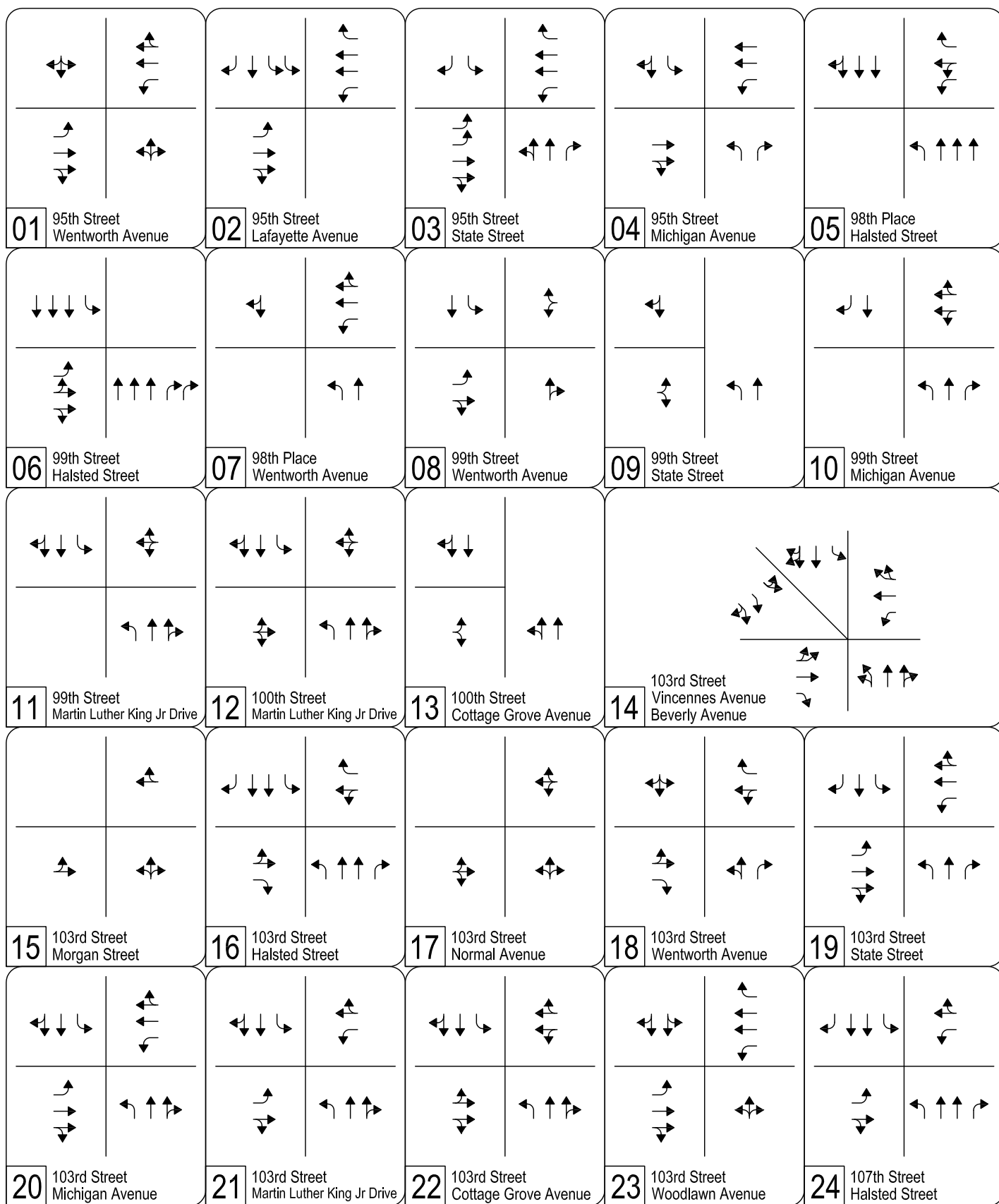
Appendix D

Union Pacific Railroad (UPRR) Rail Alternative - Right-of-Way Option

UPRR Right-of-Way Option Alternative Project Traffic Estimates

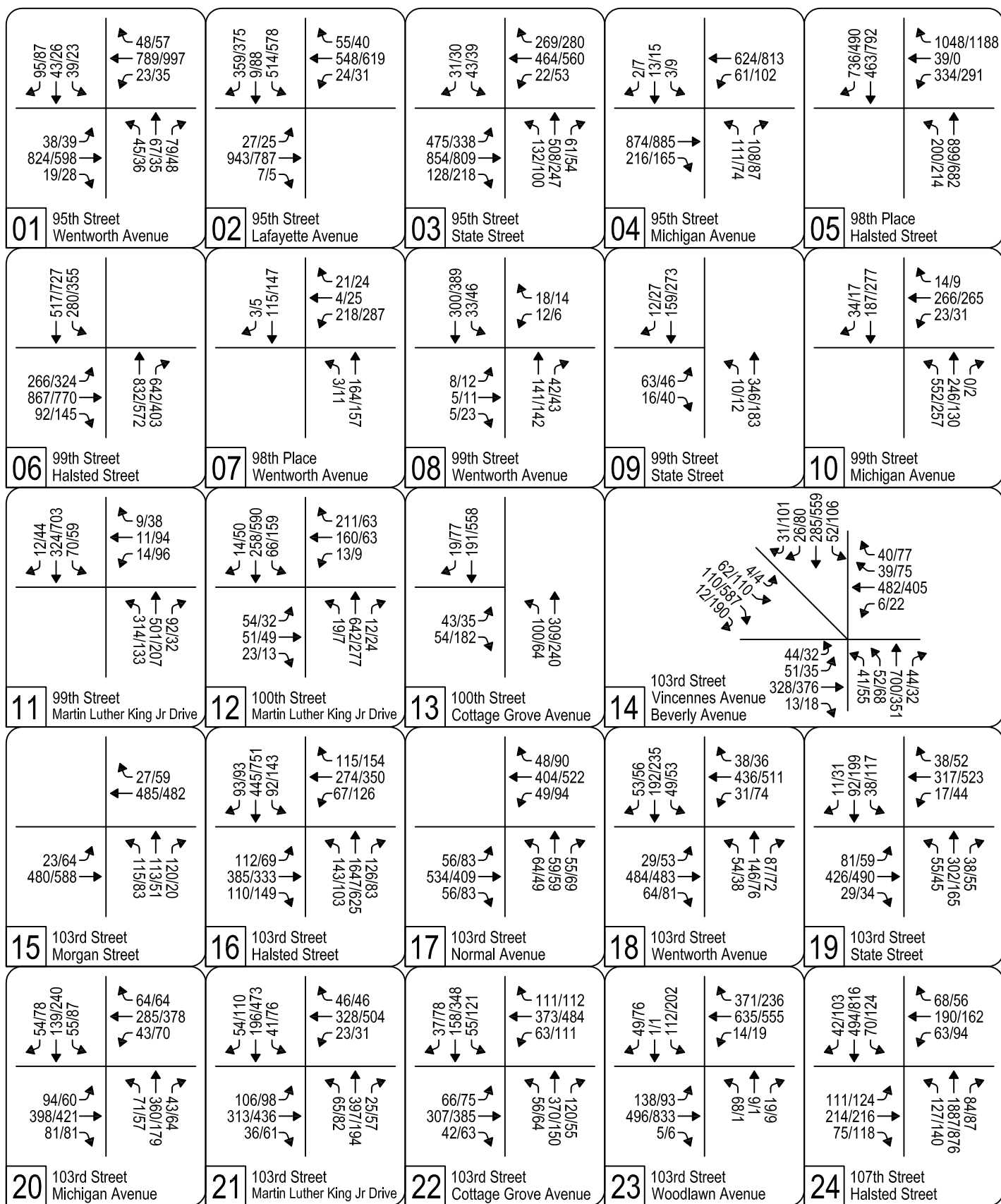
| ITE Land Use | Unit | Trip Generation Rate | | | Peak Hour Direction | | | |
|-------------------------------|----------------|----------------------|--------------|--------------|---------------------|--------|-------|--------|
| | | Daily | AM Peak Hour | PM Peak Hour | AM In | AM Out | PM In | PM Out |
| Light Rail with Park and Ride | Parking Spaces | 2.51 | 1.07 | 1.24 | 80% | 20% | 20% | 80% |

| UPRR ROW Alternative Park and Ride Facilities | | Estimated Project Traffic | | | | | | |
|---|----------------|---------------------------|--------------|------------|--------------|------------|--------------|--------------|
| Location | Parking Spaces | Daily | AM In | AM Out | AM Total | PM In | PM Out | PM Total |
| 103rd Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| 111th Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| Michigan Avenue | 1,000 | 2,510 | 856 | 214 | 1,070 | 248 | 992 | 1,240 |
| 130th Street | 2,300 | 5,773 | 1,969 | 492 | 2,461 | 570 | 2,282 | 2,852 |
| Total | 3,700 | 9,287 | 3,167 | 792 | 3,959 | 918 | 3,670 | 4,588 |



| | | | | |
|---|--|--|---|--|
| | | | | |
| 25 107th Street Wentworth Avenue | 26 107th Street State Street | 27 107th Street Michigan Avenue | 28 107th Street Martin Luther King Jr Drive | 29 107th Street Cottage Grove Avenue |
| | | | | |
| 30 111th Street Marshfield Avenue | 31 111th Street Hamlet Avenue | 32 112th Place Marshfield Avenue | 33 112th Place Hamlet Avenue | 34 111th Street Halsted Street |
| | | | | |
| 35 111th Street Normal Avenue | 36 111th Street Wentworth Avenue | 37 111th Street State Street | 38 111th Street Michigan Avenue | 39 111th Street Indiana Avenue |
| | | | | |
| 40 111th Street Martin Luther King Jr Drive | 41 111th Street Cottage Grove Avenue | 42 111th Street Ellis Avenue | 43 111th Street Doty Road | 44 111th Street I-94 Eastbound Ramps |
| | | | | |
| 45 111th Street I-94 Westbound Ramps | 46 115th Street Marshfield Avenue | 47 115th Street Ashland Avenue | 48 115th Street Racine Road | 49 115th Street Halsted Street |

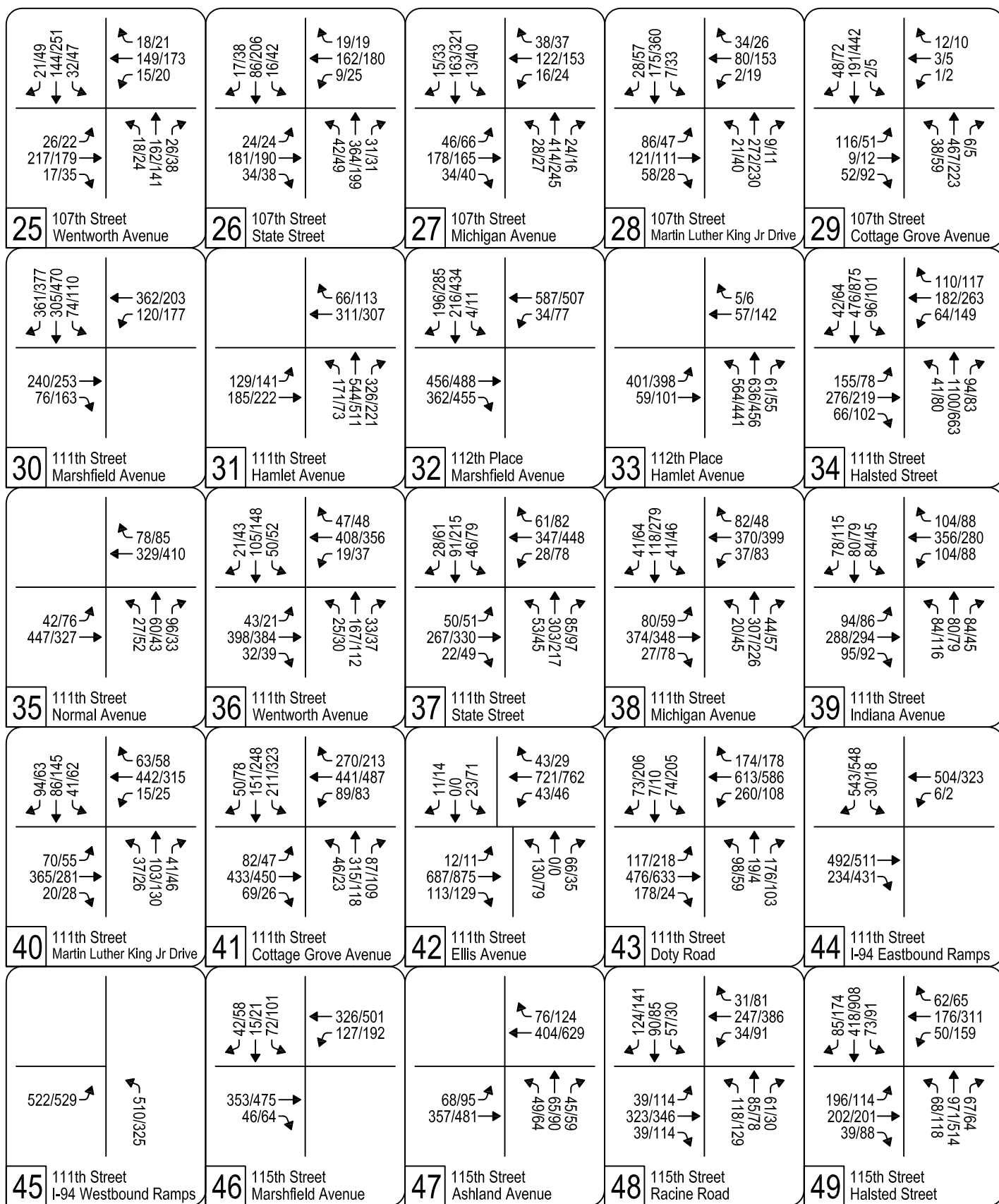
| | | | | | | | | | |
|--|---|--|--|--|--|--|---|--|---|
| | 50 111th Street Wentworth Avenue | | 51 115th Street State Street | | 52 115th Street Michigan Avenue | | 53 115th Street Indiana Avenue | | 54 115th Street Martin Luther King Jr Drive |
| | 55 115th Street Cottage Grove Avenue | | 56 115th Street I-94 Eastbound Ramps | | 57 115th Street I-94 Westbound Ramps | | 58 119th Street Marshfield Avenue | | 59 119th Street Ashland Avenue |
| | 60 119th Street Halsted Street | | 61 119th Street Wentworth Avenue | | 62 119th Street State Street | | 63 119th Street Michigan Avenue | | 64 127th Street Paulina Street |
| | 65 127th Street Marshfield Avenue | | 66 127th Street Ashland Avenue | | 67 Vermont Street Ashland Avenue | | 68 127th Street Halsted Street | | 69 Vermont Street Halsted Street |
| | 70 127th Street/Vermont Street/Wallace Street | | 71 127th Street State Street | | 72 127th Street Michigan Avenue | | 73 130th Street Indiana Avenue | | 74 130th Street Ellis Avenue |



UPRR ROW Option Alternative (2026) Intersection Traffic Volumes

Page 1 of 3

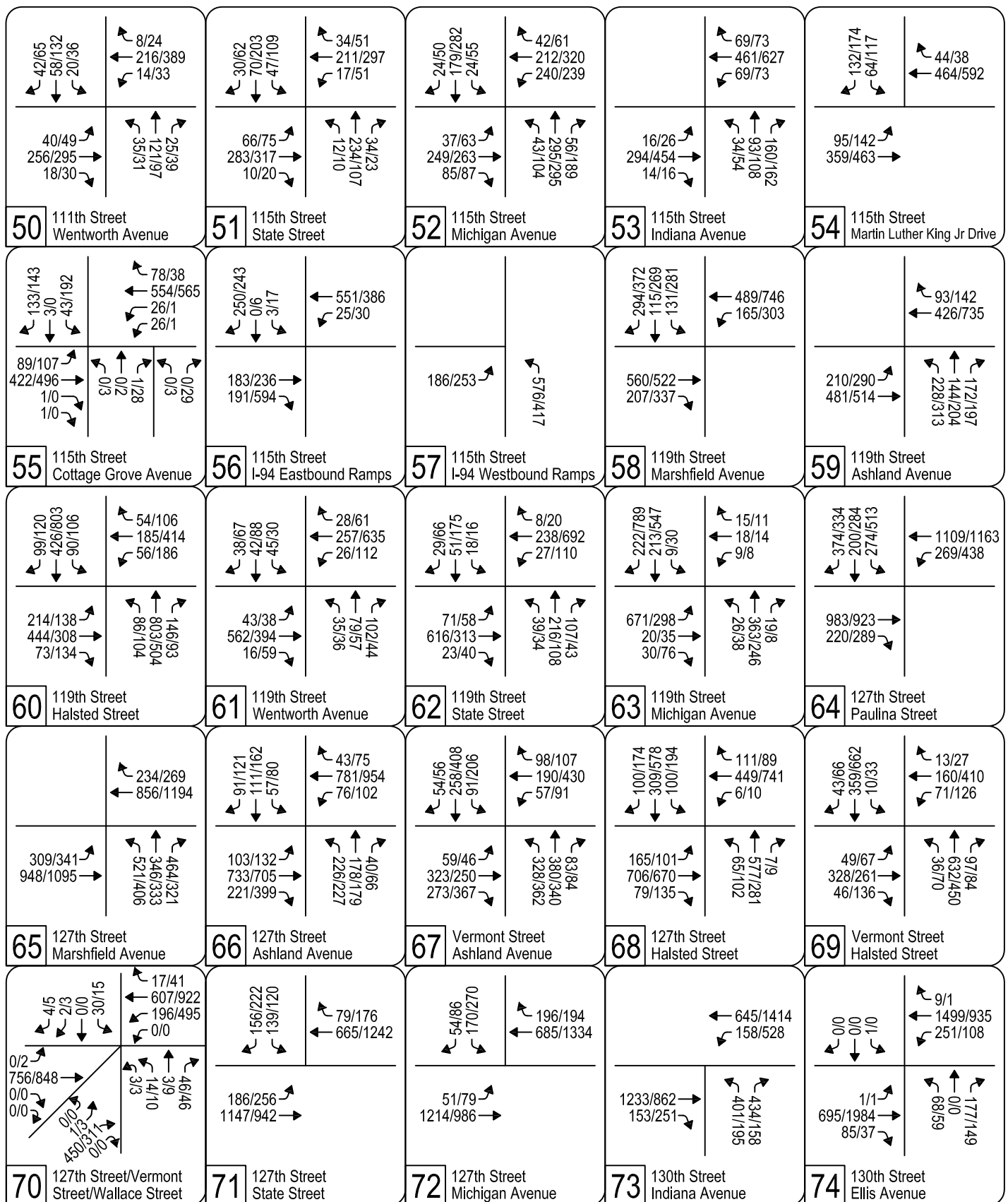
Legend: AM/PM Peak Hour Volumes



UPRR ROW Option Alternative (2026) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



UPRR ROW Option Alternative (2026) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 38 | 824 | 19 | 23 | 789 | 48 | 45 | 67 | 79 | 39 | 43 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1416 | 2975 | | 1592 | 2978 | | | 1754 | | | 1673 | |
| Flt Permitted | 0.26 | 1.00 | | 0.26 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 384 | 2975 | | 429 | 2978 | | | 1598 | | | 1532 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 867 | 20 | 24 | 831 | 51 | 47 | 71 | 83 | 41 | 45 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 63 | 0 |
| Lane Group Flow (vph) | 40 | 885 | 0 | 24 | 875 | 0 | 0 | 162 | 0 | 0 | 123 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 201 | 1556 | | 224 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | | c0.30 | | | 0.29 | | | | | | | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.20 | 0.57 | | 0.11 | 0.56 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.5 | | 7.8 | 10.5 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.82 | 1.13 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.2 | 1.5 | | 0.8 | 1.3 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.5 | 12.0 | | 7.2 | 13.1 | | | 16.4 | | | 15.7 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.0 | | | 12.9 | | | 16.4 | | | 15.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 943 | 7 | 24 | 548 | 55 | 0 | 0 | 0 | 514 | 9 | 359 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 776 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 355 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 993 | 7 | 25 | 577 | 58 | 0 | 0 | 0 | 541 | 9 | 378 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 999 | 0 | 25 | 577 | 33 | 0 | 0 | 0 | 541 | 9 | 206 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 163 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.30 | | 0.01 | c0.18 | | | | | c0.17 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.15 |
| v/c Ratio | 0.17 | 0.92 | | 0.04 | 0.33 | 0.11 | | | | 0.76 | 0.03 | 0.64 |
| Uniform Delay, d1 | 31.6 | 41.8 | | 15.1 | 15.3 | 13.3 | | | | 46.6 | 38.7 | 45.1 |
| Progression Factor | 0.80 | 0.83 | | 0.30 | 0.63 | 1.55 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 12.2 | | 0.1 | 0.3 | 0.5 | | | | 7.3 | 0.2 | 9.2 |
| Delay (s) | 27.2 | 46.8 | | 4.6 | 10.0 | 21.2 | | | | 53.9 | 38.9 | 54.3 |
| Level of Service | C | D | | A | A | C | | | | D | D | D |
| Approach Delay (s) | | 46.2 | | | 10.8 | | | 0.0 | | | 54.0 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 51.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 475 | 854 | 128 | 22 | 464 | 269 | 132 | 508 | 61 | 43 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 500 | 899 | 135 | 23 | 488 | 283 | 139 | 535 | 64 | 45 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 161 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 500 | 1026 | 0 | 23 | 488 | 122 | 0 | 674 | 39 | 45 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.33 | | 0.01 | c0.17 | | | c0.20 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.13 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.47 | 0.66 | | 0.21 | 0.70 | 0.54 | | 0.88 | 0.12 | 0.85 | | 0.05 |
| Uniform Delay, d1 | 34.5 | 24.3 | | 57.2 | 45.3 | 43.3 | | 48.3 | 39.5 | 60.4 | | 57.4 |
| Progression Factor | 0.75 | 0.19 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 5.8 | 9.0 | | 14.1 | 0.7 | 70.0 | | 0.4 |
| Delay (s) | 26.6 | 5.7 | | 61.6 | 51.0 | 52.3 | | 59.8 | 36.3 | 130.4 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.5 | | | 51.8 | | | 57.7 | | | 99.7 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.2 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 71.9% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 874 | 216 | 61 | 624 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 283 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 971 | 240 | 68 | 693 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1189 | 0 | 68 | 693 | 0 | 123 | 0 | 38 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1716 | | 170 | 1803 | | 350 | | 469 | | 577 | 622 |
| v/s Ratio Prot | | c0.42 | | | 0.23 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.24 | | | c0.11 | | 0.03 | | 0.00 | |
| v/c Ratio | | 0.69 | | 0.40 | 0.38 | | 0.35 | | 0.08 | | 0.01 | 0.02 |
| Uniform Delay, d1 | | 13.7 | | 10.5 | 10.4 | | 26.0 | | 23.7 | | 23.2 | 23.3 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.3 | | 6.9 | 0.6 | | 2.8 | | 0.3 | | 0.0 | 0.1 |
| Delay (s) | | 16.0 | | 17.4 | 11.0 | | 28.8 | | 24.1 | | 23.2 | 23.4 |
| Level of Service | | B | | B | B | | C | | C | | C | C |
| Approach Delay (s) | | 16.0 | | | 11.6 | | | 26.5 | | | | 23.3 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.8% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street




















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 334 | 39 | 1048 | 200 | 899 | 0 | 0 | 463 | 736 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3938 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3938 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 341 | 40 | 1069 | 204 | 917 | 0 | 0 | 472 | 751 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 341 | 40 | 1069 | 204 | 917 | 0 | 0 | 1223 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.31 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.72 | | | | | | |
| v/c Ratio | | | | 0.76 | 0.08 | 2.53 | 0.43 | 0.33 | | | 1.87dr | |
| Uniform Delay, d1 | | | | 33.6 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.37 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.3 | 0.3 | 694.2 | 2.0 | 0.2 | | | 41.1 | |
| Delay (s) | | | | 44.9 | 27.1 | 731.7 | 21.2 | 21.9 | | | 78.1 | |
| Level of Service | | | | D | C | F | C | C | | | E | |
| Approach Delay (s) | | 0.0 | | | 550.8 | | | 21.8 | | | 78.1 | |
| Approach LOS | | A | | | F | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 242.1 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 94.6% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  |  |
| Volume (vph) | 266 | 867 | 92 | 0 | 0 | 0 | 0 | 832 | 642 | 280 | 517 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 274 | 894 | 95 | 0 | 0 | 0 | 0 | 858 | 662 | 289 | 533 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 247 | 1009 | 0 | 0 | 0 | 0 | 0 | 858 | 662 | 289 | 533 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.18 | 0.11 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.30 | | | |
| v/c Ratio | 0.51 | 0.98 | | | | | | 0.74 | 1.14 | 0.62 | 0.19 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.1 | 38.5 | 31.9 | 9.9 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.44 | 0.46 | 1.06 | 0.43 | |
| Incremental Delay, d2 | 3.8 | 23.4 | | | | | | 0.4 | 63.2 | 2.4 | 0.1 | |
| Delay (s) | 32.5 | 58.5 | | | | | | 15.7 | 81.1 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.4 | | | 0.0 | | | 44.2 | | | 15.5 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.9 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.91 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 94.6% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 164 | 0 | 0 | 115 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 782 | 1882 | | | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 182 | 0 | 0 | 128 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 182 | 0 | 0 | 130 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | | | | 501 | | | 861 | | | 501 | | |
| v/s Ratio Prot | | | | | | | 0.00 | | | 0.00 | | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | c0.10 | | |
| v/c Ratio | | | | 0.48 | | | 0.01 | | | 0.16 | | |
| Uniform Delay, d1 | | | | 23.4 | | | 19.9 | | | 10.0 | | |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.05 | | |
| Incremental Delay, d2 | | | | 3.3 | | | 0.0 | | | 0.0 | | |
| Delay (s) | | | | 26.7 | | | 19.9 | | | 10.5 | | |
| Level of Service | | | | C | | | B | | | A | | |
| Approach Delay (s) | 0.0 | | | | | | 26.0 | | | 9.7 | | |
| Approach LOS | A | | | | | | C | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 141 | 42 | 33 | 300 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1685 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1685 | | 1010 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 148 | 44 | 35 | 316 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 179 | 0 | 35 | 316 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 642 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.92 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.7 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.8 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 16 | 10 | 346 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 384 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 384 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.39 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.17 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.5 | |
| Delay (s) | 16.0 | | 2.1 | 5.3 | 9.0 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.2 | 9.0 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 23 | 266 | 14 | 552 | 246 | 0 | 0 | 187 | 34 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3737 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.58 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3737 | | 1013 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 296 | 16 | 613 | 273 | 0 | 0 | 208 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 334 | 0 | 613 | 273 | 0 | 0 | 208 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 684 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.43 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.90 | 0.26 | | | 0.29 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 16.8 | 8.1 | | | 14.9 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 16.7 | 0.6 | | | 1.0 | 0.1 |
| Delay (s) | | | | | 23.1 | | 33.5 | 8.7 | | | 16.0 | 13.3 |
| Level of Service | | | | | C | | C | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 25.9 | | | 15.5 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.5 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 14 | 11 | 9 | 314 | 501 | 92 | 70 | 324 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1801 | | 1691 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.51 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | | | | 1801 | | 915 | 3237 | | 598 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 16 | 12 | 10 | 349 | 557 | 102 | 78 | 360 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 31 | 0 | 349 | 639 | 0 | 78 | 370 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 552 | | 573 | 1467 | | 430 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.20 | | 0.02 | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.28 | | | 0.08 | | |
| v/c Ratio | | | | | 0.06 | | 0.61 | 0.44 | | 0.18 | 0.24 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.0 | 14.0 | | 11.8 | 12.6 | |
| Progression Factor | | | | | 1.00 | | 0.71 | 0.73 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 4.4 | 0.9 | | 0.9 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 13.6 | 11.1 | | 12.8 | 13.0 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 11.9 | | | 12.9 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 54 | 51 | 23 | 13 | 160 | 211 | 19 | 642 | 12 | 66 | 258 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1945 | | | 1625 | | 1596 | 3232 | | 1641 | 3132 | |
| Flt Permitted | | 0.71 | | | 0.99 | | 0.58 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | | 1411 | | | 1612 | | 968 | 3232 | | 604 | 3132 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 54 | 24 | 14 | 168 | 222 | 20 | 676 | 13 | 69 | 272 | 15 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 124 | 0 | 0 | 345 | 0 | 20 | 687 | 0 | 69 | 282 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 470 | | | 537 | | 542 | 1810 | | 338 | 1754 | |
| v/s Ratio Prot | | | | | | | | c0.21 | | | 0.09 | |
| v/s Ratio Perm | | 0.09 | | | c0.21 | | 0.02 | | | 0.11 | | |
| v/c Ratio | | 0.26 | | | 0.64 | | 0.04 | 0.38 | | 0.20 | 0.16 | |
| Uniform Delay, d1 | | 18.3 | | | 21.2 | | 7.4 | 9.2 | | 8.2 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.16 | 0.07 | |
| Incremental Delay, d2 | | 1.4 | | | 5.8 | | 0.1 | 0.6 | | 1.3 | 0.2 | |
| Delay (s) | | 19.7 | | | 27.0 | | 7.5 | 9.8 | | 2.7 | 0.8 | |
| Level of Service | | B | | | C | | A | A | | A | A | |
| Approach Delay (s) | | 19.7 | | | 27.0 | | | 9.8 | | | 1.1 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 67.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 43 | 54 | 100 | 309 | 191 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 48 | 60 | 111 | 343 | 212 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 108 | 226 | 229 | 141 | 92 | |
| Volume Left (vph) | 48 | 111 | 0 | 0 | 0 | |
| Volume Right (vph) | 60 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.08 | -0.08 | |
| Departure Headway (s) | 5.2 | 5.4 | 5.1 | 5.3 | 5.2 | |
| Degree Utilization, x | 0.16 | 0.34 | 0.33 | 0.21 | 0.13 | |
| Capacity (veh/h) | 634 | 657 | 687 | 648 | 667 | |
| Control Delay (s) | 9.2 | 9.9 | 9.4 | 8.6 | 7.8 | |
| Approach Delay (s) | 9.2 | 9.6 | | 8.3 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.2 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 34.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 44 | 51 | 328 | 13 | 6 | 482 | 39 | 40 | 41 | 52 | 700 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3290 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.41 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 980 | 1731 | 1487 | | | 737 | 3290 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 57 | 364 | 14 | 7 | 536 | 43 | 44 | 46 | 58 | 778 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 106 | 364 | 7 | 7 | 536 | 56 | 0 | 0 | 104 | 822 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 299 | 528 | 453 | | | 175 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.21 | | | c0.31 | | | | | c0.25 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.14 | | |
| v/c Ratio | | 0.38 | 0.44 | 0.01 | 0.02 | 1.02 | 0.12 | | | 0.59 | 1.05 | |
| Uniform Delay, d1 | | 20.2 | 18.2 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.5 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 1.7 | 0.0 | 0.1 | 43.0 | 0.6 | | | 14.0 | 46.2 | |
| Delay (s) | | 24.1 | 20.0 | 14.5 | 25.7 | 79.5 | 26.9 | | | 49.5 | 86.2 | |
| Level of Service | | C | B | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.7 | | | 71.7 | | | | | 82.1 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.6 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 52 | 285 | 26 | 31 | 4 | 62 | 110 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3280 | | | | 1710 | 2622 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3280 | | | | 1710 | 2622 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 58 | 317 | 29 | 34 | 4 | 69 | 122 | 13 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 58 | 373 | 0 | 0 | 0 | 73 | 128 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.11 | | | | 0.04 | | |
| v/s Ratio Perm | 0.20 | | | | | | c0.05 | |
| v/c Ratio | 0.85 | 0.49 | | | | 0.26 | 0.29 | |
| Uniform Delay, d1 | 38.5 | 34.8 | | | | 38.1 | 38.3 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 73.0 | 2.2 | | | | 2.2 | 1.7 | |
| Delay (s) | 111.5 | 37.0 | | | | 40.2 | 40.0 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 46.9 | | | | 40.1 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 23 | 480 | 0 | 0 | 485 | 27 | 115 | 113 | 120 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1929 | | | 1769 | | | | |
| Flt Permitted | | 0.97 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1600 | | | 1929 | | | 1769 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 26 | 533 | 0 | 0 | 539 | 30 | 128 | 126 | 133 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 559 | 0 | 0 | 569 | 0 | 0 | 387 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 763 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.73 | | | 0.62 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 13.7 | | | 12.6 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.2 | | | 3.1 | | | 3.0 | | | | |
| Delay (s) | | 19.8 | | | 15.7 | | | 18.0 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 19.8 | | | 15.7 | | | 18.0 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 112 | 385 | 110 | 67 | 274 | 115 | 143 | 1647 | 126 | 92 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1924 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.66 | 1.00 | | 0.56 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1284 | 1426 | | 1088 | 1396 | 631 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 405 | 116 | 71 | 288 | 121 | 151 | 1734 | 133 | 97 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 68 | 0 | 0 | 71 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 523 | 48 | 0 | 359 | 50 | 151 | 1734 | 103 | 97 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 526 | 584 | | 446 | 572 | 389 | 1299 | 538 | 152 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.56 | | c0.04 | 0.16 | |
| v/s Ratio Perm | | c0.41 | 0.03 | | 0.33 | 0.04 | 0.16 | | 0.08 | 0.26 | | 0.03 |
| v/c Ratio | | 0.99 | 0.08 | | 0.80 | 0.09 | 0.39 | 1.33 | 0.19 | 0.64 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 30.9 | 18.9 | | 27.3 | 19.0 | 14.8 | 30.5 | 19.3 | 23.3 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.23 | 0.77 | 0.42 |
| Incremental Delay, d2 | | 37.6 | 0.3 | | 14.3 | 0.3 | 0.6 | 156.0 | 0.8 | 8.3 | 0.9 | 0.3 |
| Delay (s) | | 68.4 | 19.2 | | 41.6 | 19.3 | 15.5 | 186.5 | 20.0 | 36.9 | 18.0 | 8.4 |
| Level of Service | | E | B | | D | B | B | F | C | D | B | A |
| Approach Delay (s) | | 59.5 | | | 36.0 | | | 162.8 | | | 19.4 | |
| Approach LOS | | E | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 104.4 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.12 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 113.8% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 56 | 534 | 56 | 49 | 404 | 48 | 64 | 59 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1631 | | | 1628 | | | 1775 | | | | |
| Flt Permitted | | 0.92 | | | 0.90 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1510 | | | 1468 | | | 1775 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 593 | 62 | 54 | 449 | 53 | 71 | 66 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 25 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 712 | 0 | 0 | 550 | 0 | 0 | 173 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 883 | | | 858 | | | 519 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | 0.37 | | | 0.10 | | | | |
| v/c Ratio | | 0.81 | | | 0.64 | | | 0.33 | | | | |
| Uniform Delay, d1 | | 10.6 | | | 9.0 | | | 18.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.8 | | | 3.7 | | | 1.7 | | | | |
| Delay (s) | | 18.4 | | | 12.6 | | | 19.8 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 18.4 | | | 12.6 | | | 19.8 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 64.0% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013

























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↕ | |
| Volume (vph) | 29 | 484 | 64 | 31 | 436 | 38 | 54 | 146 | 87 | 49 | 192 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1738 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1595 | 1255 | | 1560 | 1288 | | 1419 | 1490 | | 1609 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 31 | 509 | 67 | 33 | 459 | 40 | 57 | 154 | 92 | 52 | 202 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 16 | 0 | 0 | 63 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 540 | 38 | 0 | 492 | 24 | 0 | 211 | 29 | 0 | 299 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 914 | 720 | | 894 | 738 | | 454 | 477 | | 515 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.03 | | 0.32 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.59 | 0.05 | | 0.55 | 0.03 | | 0.46 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.3 | 7.0 | | 10.0 | 7.0 | | 20.4 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.8 | 0.1 | | 2.4 | 0.1 | | 3.4 | 0.2 | | 4.7 | |
| Delay (s) | | 13.1 | 7.2 | | 12.4 | 7.0 | | 23.8 | 17.9 | | 26.0 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 12.5 | | | 12.0 | | | 22.0 | | | 26.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 93.1% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 81 | 426 | 29 | 17 | 317 | 38 | 55 | 302 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1464 | 2990 | | 1459 | 3535 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.51 | 1.00 | | 0.44 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 789 | 2990 | | 673 | 3535 | | 1116 | 1647 | 1301 | 722 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 473 | 32 | 19 | 352 | 42 | 61 | 336 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 14 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 90 | 498 | 0 | 19 | 380 | 0 | 61 | 336 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 376 | 1426 | | 321 | 1686 | | 446 | 659 | 520 | 289 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.11 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.24 | 0.35 | | 0.06 | 0.23 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 10.7 | | 9.2 | 10.0 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.76 | 0.33 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.5 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.0 | 0.6 | 0.0 |
| Delay (s) | 11.5 | 11.3 | | 9.5 | 10.3 | | 8.3 | 13.9 | 4.1 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.4 | | | 10.2 | | | 12.2 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 94 | 398 | 81 | 43 | 285 | 64 | 71 | 360 | 43 | 55 | 139 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3058 | | 1588 | 3012 | | 1541 | 3021 | | 1402 | 2764 | |
| Flt Permitted | 0.52 | 1.00 | | 0.43 | 1.00 | | 0.62 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 806 | 3058 | | 721 | 3012 | | 1013 | 3021 | | 691 | 2764 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 99 | 419 | 85 | 45 | 300 | 67 | 75 | 379 | 45 | 58 | 146 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 99 | 504 | 0 | 45 | 367 | 0 | 75 | 412 | 0 | 58 | 170 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 387 | 1468 | | 346 | 1446 | | 419 | 1249 | | 286 | 1142 | |
| v/s Ratio Prot | c0.16 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | 0.07 | | | 0.08 | | |
| v/c Ratio | 0.26 | 0.34 | | 0.13 | 0.25 | | 0.18 | 0.33 | | 0.20 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.1 | | 10.8 | 11.5 | | 13.9 | 14.9 | | 14.1 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 0.8 | 0.4 | | 0.9 | 0.7 | | 1.6 | 0.3 | |
| Delay (s) | 13.2 | 12.8 | | 11.6 | 12.0 | | 14.9 | 15.6 | | 15.7 | 14.0 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 11.9 | | | 15.5 | | | 14.4 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 49.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 106 | 313 | 36 | 23 | 328 | 46 | 65 | 397 | 25 | 41 | 196 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1473 | 1842 | | 1533 | 3073 | | 1372 | 2875 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | 0.59 | 1.00 | | 0.43 | 1.00 | |
| Satd. Flow (perm) | 722 | 1576 | | 742 | 1842 | | 951 | 3073 | | 622 | 2875 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 329 | 38 | 24 | 345 | 48 | 68 | 418 | 26 | 43 | 206 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 112 | 367 | 0 | 24 | 393 | 0 | 68 | 444 | 0 | 43 | 263 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 449 | 738 | | 372 | 793 | | 331 | 730 | | 199 | 629 | |
| v/s Ratio Prot | c0.02 | c0.23 | | 0.00 | 0.21 | | c0.01 | c0.14 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | | 0.05 | | |
| v/c Ratio | 0.25 | 0.50 | | 0.06 | 0.50 | | 0.21 | 0.61 | | 0.22 | 0.42 | |
| Uniform Delay, d1 | 13.4 | 15.7 | | 14.5 | 17.5 | | 21.5 | 28.9 | | 25.7 | 28.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.4 | | 0.1 | 2.2 | | 0.3 | 3.7 | | 0.5 | 2.0 | |
| Delay (s) | 13.7 | 18.1 | | 14.6 | 19.7 | | 21.8 | 32.6 | | 26.2 | 30.6 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.0 | | | 19.4 | | | 31.2 | | | 30.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 62.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 66 | 307 | 42 | 63 | 373 | 111 | 56 | 370 | 120 | 55 | 158 | 37 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2913 | | 1614 | 3156 | | 1580 | 2919 | |
| Flt Permitted | | 0.79 | | | 0.85 | | 0.62 | 1.00 | | 0.40 | 1.00 | |
| Satd. Flow (perm) | | 2775 | | | 2481 | | 1046 | 3156 | | 658 | 2919 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 341 | 47 | 70 | 414 | 123 | 62 | 411 | 133 | 61 | 176 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 461 | 0 | 0 | 607 | 0 | 62 | 544 | 0 | 61 | 217 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1258 | | | 1125 | | 460 | 1389 | | 290 | 1284 | |
| v/s Ratio Prot | | | | | | | c0.17 | | | | 0.07 | |
| v/s Ratio Perm | | 0.17 | | | c0.24 | | 0.06 | | | 0.09 | | |
| v/c Ratio | | 0.37 | | | 0.54 | | 0.13 | 0.39 | | 0.21 | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 14.8 | | 12.5 | 14.2 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | | 1.9 | | 0.6 | 0.8 | | 1.6 | 0.3 | |
| Delay (s) | | 14.3 | | | 16.7 | | 13.1 | 15.0 | | 14.6 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.3 | | | 16.7 | | | 14.8 | | | 13.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.47 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 62.5% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 138 | 496 | 5 | 14 | 635 | 371 | 68 | 9 | 19 | 112 | 1 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3143 | | 1629 | 3257 | 1457 | | 1612 | | | 3106 | |
| Flt Permitted | 0.36 | 1.00 | | 0.44 | 1.00 | 1.00 | | 0.70 | | | 0.75 | |
| Satd. Flow (perm) | 603 | 3143 | | 748 | 3257 | 1457 | | 1174 | | | 2411 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 153 | 551 | 6 | 16 | 706 | 412 | 76 | 10 | 21 | 124 | 1 | 54 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 143 | 0 | 12 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 153 | 556 | 0 | 16 | 706 | 269 | 0 | 95 | 0 | 0 | 138 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.23 | | | 0.23 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 394 | 2054 | | 489 | 2128 | 952 | | 273 | | | 562 | |
| v/s Ratio Prot | 0.18 | | | 0.22 | | | | | | | | |
| v/s Ratio Perm | c0.25 | | | 0.02 | | 0.18 | | c0.08 | | | 0.06 | |
| v/c Ratio | 0.39 | 0.27 | | 0.03 | 0.33 | 0.28 | | 0.35 | | | 0.24 | |
| Uniform Delay, d1 | 5.7 | 5.1 | | 4.3 | 5.4 | 5.2 | | 22.5 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.9 | 0.3 | | 0.1 | 0.4 | 0.7 | | 3.3 | | | 1.0 | |
| Delay (s) | 8.5 | 5.5 | | 4.4 | 5.8 | 5.9 | | 25.8 | | | 22.9 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.1 | | | 5.8 | | | | 25.8 | | | 22.9 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.4 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.38 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.4 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 54.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 75 | 63 | 190 | 68 | 127 | 1887 | 84 | 70 | 494 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1499 | | 1547 | 1586 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 617 | 1499 | | 524 | 1586 | | 617 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 79 | 66 | 200 | 72 | 134 | 1986 | 88 | 74 | 520 | 44 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 117 | 289 | 0 | 66 | 256 | 0 | 134 | 1986 | 70 | 74 | 520 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 254 | 388 | | 232 | 410 | | 352 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.65 | | c0.03 | 0.17 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.15 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.38 | 1.57 | 0.13 | 0.43 | 0.42 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.9 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.71 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.9 | 12.3 | | 3.1 | 7.0 | | 2.6 | 260.3 | 0.4 | 7.4 | 1.1 | 0.1 |
| Delay (s) | 28.4 | 41.2 | | 24.9 | 34.9 | | 10.8 | 277.9 | 8.0 | 25.6 | 18.9 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.6 | | | 32.9 | | | 250.9 | | | 19.4 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 164.6 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.11 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 94.0% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 26 | 217 | 17 | 15 | 149 | 18 | 18 | 162 | 26 | 32 | 144 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1850 | | | 1836 | | | 1902 | | | 1930 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1791 | | | 1791 | | | 1856 | | | 1824 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 224 | 18 | 15 | 154 | 19 | 19 | 167 | 27 | 33 | 148 | 22 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 265 | 0 | 0 | 182 | 0 | 0 | 205 | 0 | 0 | 196 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 744 | | | 744 | | | 857 | | | 842 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.36 | | | 0.24 | | | 0.24 | | | 0.23 | |
| Uniform Delay, d1 | | 13.0 | | | 12.4 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.62 | | | 1.05 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.8 | | | 0.6 | | | 0.6 | |
| Delay (s) | | 14.4 | | | 8.5 | | | 11.8 | | | 11.2 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.4 | | | 8.5 | | | 11.8 | | | 11.2 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 42 | 364 | 31 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3094 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3094 | | 781 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 47 | 404 | 34 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 47 | 428 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1809 | | 457 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.07 | 0.24 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.5 | | 5.7 | 5.8 | |
| Progression Factor | 0.72 | 0.72 | | 0.75 | 0.74 | | 0.96 | 0.99 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.7 | 13.3 | | 12.7 | 13.4 | | 5.8 | 6.7 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.3 | | | 13.4 | | | 6.6 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.1 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 40.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 13 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1839 | | | 1749 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 14 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 207 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 834 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.01 | 0.92 | | 0.88 | 0.88 | | | 0.96 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.0 | 11.9 | | 10.7 | 11.1 | | | 14.7 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.1 | | | 11.1 | | | 14.7 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.8 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 86 | 121 | 58 | 2 | 80 | 34 | 21 | 272 | 9 | 7 | 175 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1878 | | 1587 | 1870 | | | 1971 | | | 1932 | |
| Flt Permitted | 0.68 | 1.00 | | 0.58 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1141 | 1878 | | 975 | 1870 | | | 1929 | | | 1915 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 134 | 64 | 2 | 89 | 38 | 23 | 302 | 10 | 8 | 194 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 96 | 198 | 0 | 2 | 127 | 0 | 0 | 335 | 0 | 0 | 233 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 351 | 578 | | 300 | 575 | | | 1098 | | | 1090 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.00 | | | | c0.17 | | | 0.12 | |
| v/c Ratio | 0.27 | 0.34 | | 0.01 | 0.22 | | | 0.31 | | | 0.21 | |
| Uniform Delay, d1 | 17.0 | 17.4 | | 15.6 | 16.7 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.90 | 0.89 | | 0.87 | 0.92 | | | 0.95 | | | 1.00 | |
| Incremental Delay, d2 | 1.9 | 1.6 | | 0.0 | 0.9 | | | 0.7 | | | 0.4 | |
| Delay (s) | 17.2 | 17.1 | | 13.7 | 16.2 | | | 7.7 | | | 7.3 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.1 | | | 16.2 | | | 7.7 | | | 7.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

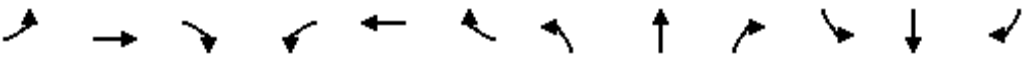
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 116 | 9 | 52 | 1 | 3 | 12 | 38 | 467 | 6 | 2 | 191 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1673 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.63 | 1.00 | 1.00 | 0.39 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1673 | | 1283 | 1422 | | 981 | 1631 | 1392 | 682 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 129 | 10 | 58 | 1 | 3 | 13 | 42 | 519 | 7 | 2 | 212 | 53 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 129 | 26 | 0 | 1 | 7 | 0 | 42 | 519 | 4 | 2 | 212 | 32 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 355 | 394 | | 589 | 979 | 835 | 409 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.32 | | | 0.11 | |
| v/s Ratio Perm | c0.10 | | | 0.00 | | | 0.04 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.37 | 0.06 | | 0.00 | 0.02 | | 0.07 | 0.53 | 0.01 | 0.00 | 0.19 | 0.04 |
| Uniform Delay, d1 | 18.9 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.6 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.38 | | 1.00 | 1.00 | | 1.13 | 1.07 | 1.31 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.9 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.6 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 30.8 | 41.3 | | 17.0 | 17.1 | | 6.3 | 9.8 | 6.8 | 5.2 | 6.2 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 34.4 | | | 17.1 | | | 9.5 | | | 6.0 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↔ | ↑↑ | | | | | ↔ | ↑↑ | |
| Volume (vph) | 0 | 240 | 76 | 120 | 362 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 848 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 253 | 80 | 126 | 381 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 303 | 0 | 126 | 381 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 653 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.04 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.06 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.19 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.5 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.95 | 2.05 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.1 | 19.7 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.0 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 185 | 0 | 0 | 311 | 66 | 171 | 544 | 326 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 637 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 195 | 0 | 0 | 327 | 69 | 180 | 573 | 343 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 230 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 195 | 0 | 0 | 378 | 0 | 180 | 573 | 113 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 686 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.13 | | 0.10 | c0.32 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.64 | | 0.31 | 0.97 | 0.23 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.0 | | 25.0 | 33.1 | 24.3 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.75 | 0.78 | 1.92 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.1 | | 0.9 | 24.5 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 41.1 | | 19.6 | 50.4 | 47.4 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 41.1 | | | 44.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.1 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 456 | 362 | 34 | 587 | 0 | 0 | 0 | 0 | 4 | 216 | 196 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3110 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3110 | | 294 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 475 | 377 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 225 | 204 |
| RTOR Reduction (vph) | 0 | 143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 0 | 709 | 0 | 35 | 611 | 0 | 0 | 0 | 0 | 4 | 225 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1120 | | 396 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.63 | | 0.09 | 0.32 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.5 | | 12.4 | 10.8 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.55 | 0.68 | | | | | 0.74 | 0.79 | 0.94 |
| Incremental Delay, d2 | | 2.7 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.3 | | 7.0 | 7.6 | | | | | 16.1 | 19.0 | 22.0 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.3 | | | 7.5 | | | 0.0 | | | 20.4 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

1/14/2013


| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 401 | 59 | 0 | 0 | 57 | 5 | 564 | 636 | 61 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3041 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2338 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 413 | 61 | 0 | 0 | 59 | 5 | 581 | 656 | 63 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 206 | 268 | 0 | 0 | 60 | 0 | 581 | 656 | 25 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1445 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.37 | c0.40 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.19 | | | 0.13 | | 1.01 | 1.08 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.23 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 40.1 | 60.9 | 0.2 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 71.6 | 92.4 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.7 | | | 37.4 | | | 79.6 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.6 | | | | HCM Level of Service | | E | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 87.7% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 155 | 276 | 66 | 64 | 182 | 110 | 41 | 1100 | 94 | 96 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2844 | | | 2772 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.67 | | | 0.79 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1936 | | | 2201 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 161 | 288 | 69 | 67 | 190 | 115 | 43 | 1146 | 98 | 100 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 60 | 0 | 0 | 0 | 39 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 504 | 0 | 0 | 312 | 0 | 43 | 1146 | 59 | 100 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 884 | | | 725 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.37 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.20 | | | c0.14 | | 0.06 | | 0.04 | 0.26 | | 0.01 |
| v/c Ratio | | 0.57 | | | 0.43 | | 0.15 | 0.95 | 0.11 | 0.69 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.6 | | | 22.3 | | 14.7 | 24.9 | 16.6 | 18.6 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.30 | 0.86 | 1.39 | 1.83 | 1.64 | 3.16 |
| Incremental Delay, d2 | | 2.7 | | | 1.9 | | 0.6 | 11.0 | 0.3 | 22.3 | 1.0 | 0.1 |
| Delay (s) | | 21.3 | | | 24.1 | | 19.7 | 32.3 | 23.4 | 56.4 | 31.8 | 51.0 |
| Level of Service | | C | | | C | | B | C | C | E | C | D |
| Approach Delay (s) | | 21.3 | | | 24.1 | | | 31.2 | | | 37.0 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 29.7 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.71 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | | |
| Intersection Capacity Utilization | | 79.7% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 42 | 447 | 0 | 0 | 329 | 78 | 27 | 60 | 96 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1707 | | | 1670 | | | 1581 | | | | |
| Flt Permitted | | 0.94 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1609 | | | 1670 | | | 1581 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 47 | 497 | 0 | 0 | 366 | 87 | 30 | 67 | 107 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 61 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 544 | 0 | 0 | 440 | 0 | 0 | 143 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 842 | | | 874 | | | 559 | | | | |
| v/s Ratio Prot | | | | | 0.26 | | | | | | | |
| v/s Ratio Perm | | 0.34 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.65 | | | 0.50 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 11.2 | | | 10.0 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.8 | | | 1.7 | | | 1.1 | | | | |
| Delay (s) | | 15.0 | | | 8.1 | | | 16.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 15.0 | | | 8.1 | | | 16.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 43 | 398 | 32 | 19 | 408 | 47 | 25 | 167 | 33 | 50 | 105 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1843 | | | 3185 | | | 3147 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.91 | | | 0.83 | |
| Satd. Flow (perm) | | 1760 | | | 1798 | | | 2931 | | | 2649 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 48 | 442 | 36 | 21 | 453 | 52 | 28 | 186 | 37 | 56 | 117 | 23 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 522 | 0 | 0 | 520 | 0 | 0 | 229 | 0 | 0 | 183 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 812 | | | 830 | | | 1217 | | | 1100 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.29 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.64 | | | 0.63 | | | 0.19 | | | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 13.3 | | | 12.1 | | | 11.9 | |
| Progression Factor | | 0.65 | | | 0.52 | | | 0.86 | | | 0.57 | |
| Incremental Delay, d2 | | 3.2 | | | 3.4 | | | 0.3 | | | 0.3 | |
| Delay (s) | | 11.8 | | | 10.3 | | | 10.7 | | | 7.1 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 11.8 | | | 10.3 | | | 10.7 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | | | HCM Level of Service | | | | | B | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 79.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 267 | 22 | 28 | 347 | 61 | 53 | 303 | 85 | 46 | 91 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2934 | | 1583 | 2945 | | 1497 | 3034 | | 1594 | 2896 | |
| Flt Permitted | 0.43 | 1.00 | | 0.55 | 1.00 | | 0.67 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 684 | 2934 | | 910 | 2945 | | 1053 | 3034 | | 833 | 2896 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 56 | 297 | 24 | 31 | 386 | 68 | 59 | 337 | 94 | 51 | 101 | 31 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 56 | 312 | 0 | 31 | 432 | 0 | 59 | 392 | 0 | 51 | 118 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 232 | 993 | | 308 | 997 | | 567 | 1634 | | 449 | 1559 | |
| v/s Ratio Prot | | 0.11 | | | c0.15 | | | c0.13 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.24 | 0.31 | | 0.10 | 0.43 | | 0.10 | 0.24 | | 0.11 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 15.9 | | 14.7 | 16.7 | | 7.3 | 7.9 | | 7.4 | 7.2 | |
| Progression Factor | 0.59 | 0.56 | | 0.77 | 0.78 | | 0.68 | 0.68 | | 1.32 | 1.37 | |
| Incremental Delay, d2 | 2.0 | 0.7 | | 0.6 | 1.3 | | 0.4 | 0.3 | | 0.5 | 0.1 | |
| Delay (s) | 11.1 | 9.6 | | 11.9 | 14.4 | | 5.4 | 5.7 | | 10.3 | 10.0 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.2 | | | 5.7 | | | 10.1 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.9 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.31 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 80 | 374 | 27 | 37 | 370 | 82 | 20 | 307 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1385 | 3013 | | 1334 | 3540 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.49 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 667 | 3013 | | 692 | 3540 | | | 3226 | | | 2809 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 84 | 394 | 28 | 39 | 389 | 86 | 21 | 323 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 29 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 84 | 414 | 0 | 39 | 446 | 0 | 0 | 374 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 318 | 1437 | | 330 | 1688 | | | 1290 | | | 1124 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.26 | 0.29 | | 0.12 | 0.26 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.3 | | 9.4 | 10.2 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.60 | 1.64 | | 0.77 | 0.75 | | | 0.36 | | | 0.64 | |
| Incremental Delay, d2 | 2.0 | 0.5 | | 0.6 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 18.3 | 17.4 | | 7.9 | 8.0 | | | 5.3 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | 17.6 | | | 8.0 | | | 5.3 | | | 8.3 | | |
| Approach LOS | B | | | A | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.29 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.0% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰↱ | | | ↰↱ | | | ↰↱ | |
| Volume (vph) | 94 | 288 | 95 | 104 | 356 | 104 | 84 | 80 | 84 | 84 | 80 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3033 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.75 | 1.00 | | 0.77 | | | 0.80 | | | 0.79 | |
| Satd. Flow (perm) | | 1235 | 1409 | | 2363 | | | 1480 | | | 1469 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 104 | 320 | 106 | 116 | 396 | 116 | 93 | 89 | 93 | 93 | 89 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 51 | 0 | 30 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 424 | 55 | 0 | 598 | 0 | 0 | 247 | 0 | 0 | 243 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 646 | 737 | | 1236 | | | 478 | | | 475 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.04 | | 0.25 | | | c0.17 | | | 0.17 | |
| v/c Ratio | | 0.66 | 0.08 | | 0.48 | | | 0.52 | | | 0.51 | |
| Uniform Delay, d1 | | 11.3 | 7.7 | | 9.9 | | | 17.9 | | | 17.8 | |
| Progression Factor | | 2.03 | 5.66 | | 0.40 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 5.0 | 0.2 | | 1.3 | | | 3.9 | | | 3.9 | |
| Delay (s) | | 27.9 | 43.8 | | 5.3 | | | 21.8 | | | 21.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 31.1 | | | 5.3 | | | 21.8 | | | 21.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 70.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 70 | 365 | 20 | 15 | 442 | 63 | 37 | 103 | 41 | 41 | 86 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1572 | 3002 | | | 3454 | | | 3404 | |
| Flt Permitted | 0.39 | 1.00 | | 0.48 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 606 | 3018 | | 793 | 3002 | | | 3037 | | | 3020 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 78 | 406 | 22 | 17 | 491 | 70 | 41 | 114 | 46 | 46 | 96 | 104 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 58 | 0 |
| Lane Group Flow (vph) | 78 | 422 | 0 | 17 | 544 | 0 | 0 | 176 | 0 | 0 | 188 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 261 | 1300 | | 342 | 1293 | | | 1355 | | | 1347 | |
| v/s Ratio Prot | | 0.14 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.06 | | | c0.06 | |
| v/c Ratio | 0.30 | 0.32 | | 0.05 | 0.42 | | | 0.13 | | | 0.14 | |
| Uniform Delay, d1 | 12.1 | 12.2 | | 10.8 | 12.9 | | | 10.6 | | | 10.6 | |
| Progression Factor | 0.99 | 1.01 | | 1.12 | 0.94 | | | 0.99 | | | 0.81 | |
| Incremental Delay, d2 | 2.3 | 0.5 | | 0.2 | 0.6 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.2 | 12.9 | | 12.2 | 12.7 | | | 10.7 | | | 8.9 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.1 | | | 12.6 | | | 10.7 | | | 8.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 82 | 433 | 69 | 89 | 441 | 270 | 46 | 315 | 87 | 211 | 151 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3075 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.66 | | | 0.76 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2099 | | | 2351 | | | 2784 | | | 2030 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 91 | 481 | 77 | 99 | 490 | 300 | 51 | 350 | 97 | 234 | 168 | 56 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 99 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 633 | 0 | 0 | 790 | 0 | 0 | 465 | 0 | 0 | 441 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 840 | | | 940 | | | 1276 | | | 625 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.30 | | | c0.34 | | | 0.13 | | | c0.22 | |
| v/c Ratio | | 0.75 | | | 0.84 | | | 0.36 | | | 0.88dl | |
| Uniform Delay, d1 | | 16.7 | | | 17.6 | | | 11.9 | | | 19.9 | |
| Progression Factor | | 1.76 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 6.1 | | | 9.0 | | | 0.8 | | | 6.6 | |
| Delay (s) | | 35.5 | | | 26.6 | | | 12.7 | | | 24.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 35.5 | | | 26.6 | | | 12.7 | | | 24.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 85.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 687 | 113 | 43 | 721 | 0 | 130 | 0 | 66 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2975 | | | 3031 | | | 1584 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2975 | | | 2567 | | | 1309 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 763 | 126 | 48 | 801 | 0 | 144 | 0 | 73 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 871 | 0 | 0 | 849 | 0 | 0 | 196 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1917 | | | 941 | | | 233 | | | | | |
| v/s Ratio Prot | c0.29 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | c0.15 | | | | | |
| v/c Ratio | 0.45 | | | 0.90 | | | 0.84 | | | | | |
| Uniform Delay, d1 | 8.0 | | | 27.0 | | | 35.8 | | | | | |
| Progression Factor | 0.01 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 12.2 | | | 29.3 | | | | | |
| Delay (s) | 0.5 | | | 54.5 | | | 65.1 | | | | | |
| Level of Service | A | | | D | | | E | | | | | |
| Approach Delay (s) | 0.5 | | | 54.5 | | | 65.1 | | | 0.0 | | |
| Approach LOS | A | | | D | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 31.1 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.76 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 70.6% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 117 | 476 | 178 | 260 | 613 | 174 | 98 | 19 | 176 | 74 | 7 | 73 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.33 | 1.00 | | 0.23 | 1.00 | 1.00 | | 0.89 | | 0.41 | 1.00 | 1.00 |
| Satd. Flow (perm) | 529 | 3020 | | 400 | 3257 | 1457 | | 1581 | | 698 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 130 | 529 | 198 | 289 | 681 | 193 | 109 | 21 | 196 | 82 | 8 | 81 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 98 | 0 | 74 | 0 | 0 | 0 | 44 |
| Lane Group Flow (vph) | 130 | 687 | 0 | 289 | 681 | 95 | 0 | 252 | 0 | 82 | 8 | 37 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 41.9 | 32.6 | | 48.2 | 35.9 | 44.5 | | 20.2 | | 31.8 | 31.8 | 41.1 |
| Effective Green, g (s) | 41.9 | 32.6 | | 48.2 | 35.9 | 44.5 | | 20.2 | | 31.8 | 31.8 | 41.1 |
| Actuated g/C Ratio | 0.47 | 0.36 | | 0.54 | 0.40 | 0.49 | | 0.22 | | 0.35 | 0.35 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 1094 | | 386 | 1299 | 720 | | 355 | | 336 | 606 | 665 |
| v/s Ratio Prot | 0.04 | 0.23 | | c0.10 | 0.21 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.16 | | 0.06 | | 0.02 |
| v/c Ratio | 0.37 | 0.63 | | 0.75 | 0.52 | 0.13 | | 0.71 | | 0.24 | 0.01 | 0.06 |
| Uniform Delay, d1 | 14.2 | 23.7 | | 13.6 | 20.6 | 12.3 | | 32.2 | | 21.4 | 18.9 | 13.6 |
| Progression Factor | 1.92 | 1.62 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.8 | 2.5 | | 8.2 | 1.5 | 0.1 | | 7.0 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 28.1 | 40.8 | | 21.9 | 22.1 | 12.4 | | 39.2 | | 21.8 | 18.9 | 13.7 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 38.9 | | | 20.4 | | | 39.2 | | | 17.8 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 71.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 492 | 234 | 6 | 504 | 0 | 0 | 0 | 0 | 30 | 0 | 543 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 547 | 260 | 7 | 560 | 0 | 0 | 0 | 0 | 33 | 0 | 603 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 560 | | | 547 | | | 840 | 1120 | 273 | 847 | 1120 | 280 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 560 | | | 547 | | | 840 | 1120 | 273 | 847 | 1120 | 280 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 87 | 100 | 15 | | | | | | | |
| cM capacity (veh/h) | 987 | | | 998 | | | 37 | 199 | 715 | 249 | 199 | 708 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 273 | 273 | 260 | 193 | 373 | 33 | 603 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 33 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 260 | 0 | 0 | 0 | 603 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 998 | 1700 | 249 | 708 | | | | | | | | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.15 | 0.01 | 0.22 | 0.13 | 0.85 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 11 | 246 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 21.7 | 32.1 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | D | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 31.5 | | | | | | | | | | | | |
| Approach LOS | | | | | | D | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 10.0 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 57.0% | | ICU Level of Service | | B | | | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | ←← | | ← | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 522 | 0 | 510 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 580 | 0 | 567 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 290 | 290 | 567 | | | |
| Volume Left (vph) | 290 | 290 | 567 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 5.7 | | | |
| Degree Utilization, x | 0.55 | 0.55 | 0.90 | | | |
| Capacity (veh/h) | 514 | 505 | 627 | | | |
| Control Delay (s) | 16.7 | 16.7 | 38.6 | | | |
| Approach Delay (s) | 16.7 | | 38.6 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 27.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 52.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 353 | 46 | 127 | 326 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3094 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.44 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3094 | | 730 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 392 | 51 | 141 | 362 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 431 | 0 | 141 | 362 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 520 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.14 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.27 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.4 | | 11.5 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.27 | 0.24 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.2 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.1 | | 4.4 | 2.3 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.1 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 357 | 0 | 0 | 404 | 76 | 49 | 65 | 45 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3074 | | | 4413 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 650 | 3257 | | | 3074 | | | 4413 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 397 | 0 | 0 | 449 | 84 | 54 | 72 | 50 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 397 | 0 | 0 | 515 | 0 | 0 | 142 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 482 | 1839 | | | 1266 | | | 1402 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.22 | | | 0.41 | | | 0.10 | | | | |
| Uniform Delay, d1 | 12.2 | 9.2 | | | 17.7 | | | 20.4 | | | | |
| Progression Factor | 0.33 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.1 | | | | |
| Delay (s) | 4.6 | 3.2 | | | 18.6 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.6 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 34.2% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 323 | 39 | 34 | 247 | 31 | 118 | 85 | 61 | 57 | 90 | 124 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2982 | | | 2979 | | | 1787 | | | 1751 | |
| Flt Permitted | | 0.89 | | | 0.87 | | | 0.76 | | | 0.88 | |
| Satd. Flow (perm) | | 2664 | | | 2613 | | | 1380 | | | 1562 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 359 | 43 | 38 | 274 | 34 | 131 | 94 | 68 | 63 | 100 | 138 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 13 | 0 | 0 | 17 | 0 | 0 | 47 | 0 |
| Lane Group Flow (vph) | 0 | 433 | 0 | 0 | 333 | 0 | 0 | 276 | 0 | 0 | 254 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 943 | | | 925 | | | 679 | | | 769 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.13 | | | c0.20 | | | 0.16 | |
| v/c Ratio | | 0.46 | | | 0.36 | | | 0.41 | | | 0.33 | |
| Uniform Delay, d1 | | 16.2 | | | 15.6 | | | 10.5 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.6 | | | 1.1 | | | 1.8 | | | 1.2 | |
| Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.43 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 63.7% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 196 | 202 | 39 | 50 | 176 | 62 | 68 | 971 | 67 | 73 | 418 | 85 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.44 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 688 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 206 | 213 | 41 | 53 | 185 | 65 | 72 | 1022 | 71 | 77 | 440 | 89 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 43 | 0 | 0 | 54 |
| Lane Group Flow (vph) | 206 | 235 | 0 | 53 | 209 | 0 | 72 | 1022 | 28 | 77 | 440 | 35 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 329 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.03 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.34 | | c0.03 | 0.15 | |
| v/s Ratio Perm | c0.17 | | | 0.04 | | | 0.08 | | 0.02 | 0.20 | | 0.03 |
| v/c Ratio | 0.56 | 0.24 | | 0.14 | 0.18 | | 0.22 | 0.87 | 0.05 | 0.53 | 0.38 | 0.07 |
| Uniform Delay, d1 | 21.3 | 20.7 | | 18.4 | 20.3 | | 14.9 | 24.0 | 16.2 | 17.2 | 18.6 | 16.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.00 | 0.61 | 0.82 |
| Incremental Delay, d2 | 6.2 | 0.6 | | 0.8 | 0.3 | | 1.5 | 8.6 | 0.2 | 12.3 | 0.8 | 0.3 |
| Delay (s) | 27.5 | 21.3 | | 19.2 | 20.7 | | 16.5 | 32.6 | 16.4 | 46.8 | 12.2 | 13.7 |
| Level of Service | C | C | | B | C | | B | C | B | D | B | B |
| Approach Delay (s) | | 24.1 | | | 20.4 | | | 30.6 | | | 16.8 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.9 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 70.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 40 | 256 | 18 | 14 | 216 | 8 | 35 | 121 | 25 | 20 | 58 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1973 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1823 | 1382 | | 1910 | 1331 | | 1866 | 1452 | | 1810 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 42 | 269 | 19 | 15 | 227 | 8 | 37 | 127 | 26 | 21 | 61 | 44 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 0 | 311 | 9 | 0 | 242 | 4 | 0 | 164 | 11 | 0 | 82 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 841 | 638 | | 882 | 614 | | 775 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.09 | 0.01 | | 0.05 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.21 | 0.02 | | 0.11 | 0.03 |
| Uniform Delay, d1 | | 11.4 | 9.5 | | 10.8 | 9.4 | | 12.2 | 11.2 | | 11.6 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.46 | 0.35 | | 1.17 | 1.42 | | 0.94 | 0.84 |
| Incremental Delay, d2 | | 1.3 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.7 | 3.4 | | 14.8 | 16.0 | | 11.2 | 9.5 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.6 | | | 15.0 | | | 10.6 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 283 | 10 | 17 | 211 | 34 | 12 | 234 | 34 | 47 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3025 | | 1520 | 2976 | | 1520 | 2982 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.56 | 1.00 | | 0.68 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3025 | | 888 | 2976 | | 1091 | 2982 | | 891 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 314 | 11 | 19 | 234 | 38 | 13 | 260 | 38 | 52 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 20 | 0 | 0 | 18 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 321 | 0 | 19 | 252 | 0 | 13 | 280 | 0 | 52 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1489 | | 301 | 1007 | | 453 | 1239 | | 370 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.08 | | | c0.09 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.06 | | |
| v/c Ratio | 0.45 | 0.22 | | 0.06 | 0.25 | | 0.03 | 0.23 | | 0.14 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 9.4 | | 14.5 | 15.5 | | 11.2 | 12.3 | | 11.8 | 11.5 | |
| Progression Factor | 0.85 | 0.48 | | 0.86 | 0.83 | | 0.54 | 0.56 | | 1.16 | 1.17 | |
| Incremental Delay, d2 | 8.3 | 0.3 | | 0.4 | 0.6 | | 0.1 | 0.4 | | 0.8 | 0.1 | |
| Delay (s) | 31.6 | 4.8 | | 12.8 | 13.5 | | 6.2 | 7.2 | | 14.4 | 13.6 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.7 | | | 13.4 | | | 7.2 | | | 13.8 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 249 | 85 | 240 | 212 | 42 | 43 | 295 | 56 | 24 | 179 | 24 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2924 | | 1520 | 2964 | | | 3171 | | | 3188 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.90 | | | 0.89 | |
| Satd. Flow (perm) | 925 | 2924 | | 1520 | 2964 | | | 2860 | | | 2861 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 277 | 94 | 267 | 236 | 47 | 48 | 328 | 62 | 27 | 199 | 27 |
| RTOR Reduction (vph) | 0 | 51 | 0 | 0 | 25 | 0 | 0 | 20 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 41 | 320 | 0 | 267 | 258 | 0 | 0 | 418 | 0 | 0 | 239 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 285 | 900 | | 140 | 1322 | | | 1100 | | | 1100 | |
| v/s Ratio Prot | | c0.11 | | c0.18 | 0.09 | | | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | c0.15 | | | 0.08 | |
| v/c Ratio | 0.14 | 0.36 | | 1.91 | 0.19 | | | 0.38 | | | 0.22 | |
| Uniform Delay, d1 | 16.3 | 17.5 | | 29.5 | 10.9 | | | 14.4 | | | 13.4 | |
| Progression Factor | 0.64 | 0.55 | | 1.32 | 1.10 | | | 1.26 | | | 0.81 | |
| Incremental Delay, d2 | 1.0 | 1.1 | | 426.9 | 0.2 | | | 0.2 | | | 0.5 | |
| Delay (s) | 11.5 | 10.7 | | 465.9 | 12.3 | | | 18.4 | | | 11.4 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | | 10.8 | | | 232.5 | | | 18.4 | | | 11.4 | |
| Approach LOS | | B | | | F | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 86.7 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 56.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 294 | 14 | 69 | 461 | 69 | 34 | 93 | 160 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1586 | | | 1566 | | | 3165 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1453 | | | 3165 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 327 | 16 | 77 | 512 | 77 | 38 | 103 | 178 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 359 | 0 | 0 | 660 | 0 | 0 | 182 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 937 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.23 | | | 0.45 | | | 0.06 | | | | |
| v/c Ratio | | 0.36 | | | 0.70 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.5 | | | 20.3 | | | | |
| Progression Factor | | 1.68 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.0 | | | 4.4 | | | 0.8 | | | | |
| Delay (s) | | 10.0 | | | 11.9 | | | 21.1 | | | | |
| Level of Service | | A | | | B | | | C | | | | |
| Approach Delay (s) | | 10.0 | | | 11.9 | | | 21.1 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 95 | 359 | 464 | 44 | 64 | 132 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 100 | 378 | 488 | 46 | 67 | 139 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.86 | | | | 0.86 | 0.86 |
| vC, conflicting volume | 556 | | | | 1115 | 536 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 398 | | | | 1051 | 374 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 64 | 75 |
| cM capacity (veh/h) | 936 | | | | 188 | 565 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 478 | 535 | 67 | 139 | | |
| Volume Left | 100 | 0 | 67 | 0 | | |
| Volume Right | 0 | 46 | 0 | 139 | | |
| cSH | 936 | 1700 | 188 | 565 | | |
| Volume to Capacity | 0.11 | 0.31 | 0.36 | 0.25 | | |
| Queue Length 95th (ft) | 9 | 0 | 38 | 24 | | |
| Control Delay (s) | 3.0 | 0.0 | 34.4 | 13.4 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 3.0 | 0.0 | 20.3 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.6 | | | |
| Intersection Capacity Utilization | | | 68.9% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 463 | 1 | 26 | 658 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1663 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 514 | 1 | 29 | 731 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 515 | 0 | 0 | 760 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 607 | | |
| v/s Ratio Prot | c0.30 | | | | | |
| v/s Ratio Perm | | | | c0.46 | | |
| v/c Ratio | 0.43 | | | 1.25 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.05 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 126.6 | | |
| Delay (s) | 0.4 | | | 153.6 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.4 | | | 153.6 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 91.7 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 0.85 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 62.1% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 183 | 191 | 25 | 551 | 0 | 0 | 0 | 0 | 3 | 0 | 250 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 203 | 212 | 28 | 612 | 0 | 0 | 0 | 0 | 3 | 0 | 278 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 612 | | | 203 | | | 977 | 977 | 208 | 769 | 871 | 612 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 612 | | | 203 | | | 977 | 977 | 208 | 769 | 871 | 612 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 36 |
| cM capacity (veh/h) | 977 | | | 986 | | | 72 | 246 | 805 | 288 | 283 | 431 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 136 | 280 | 640 | 3 | 278 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 212 | 0 | 0 | 278 | | | | | | | |
| cSH | 1700 | 1700 | 986 | 288 | 431 | | | | | | | |
| Volume to Capacity | 0.08 | 0.16 | 0.03 | 0.01 | 0.64 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 110 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.7 | 27.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 27.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.2% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | 🚗🚗 | | 🚗 | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 186 | 0 | 576 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 207 | 0 | 640 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 103 | 103 | 640 | | | |
| Volume Left (vph) | 103 | 103 | 640 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.8 | | | |
| Degree Utilization, x | 0.19 | 0.19 | 0.86 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.2 | 10.2 | 29.9 | | | |
| Approach Delay (s) | 10.2 | | 29.9 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 25.1 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.0% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 560 | 207 | 165 | 489 | 0 | 0 | 0 | 0 | 131 | 115 | 294 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 589 | 218 | 174 | 515 | 0 | 0 | 0 | 0 | 138 | 121 | 309 |
| RTOR Reduction (vph) | 0 | 0 | 123 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | 91 |
| Lane Group Flow (vph) | 0 | 589 | 95 | 0 | 689 | 0 | 0 | 0 | 0 | 76 | 239 | 63 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 71.5 | | | | | 20.3 | 20.3 | 65.3 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 71.5 | | | | | 20.3 | 20.3 | 65.3 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.45 | | | | | 0.13 | 0.13 | 0.41 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 726 | 293 | | 1507 | | | | | 171 | 469 | 458 |
| v/s Ratio Prot | | c0.20 | | | c0.20 | | | | | 0.06 | c0.06 | |
| v/s Ratio Perm | | | 0.08 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.81 | 0.32 | | 0.46 | | | | | 0.44 | 0.51 | 0.14 |
| Uniform Delay, d1 | | 57.0 | 49.7 | | 30.8 | | | | | 64.6 | 65.2 | 29.7 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 9.6 | 2.9 | | 0.1 | | | | | 1.8 | 0.9 | 0.1 |
| Delay (s) | | 66.6 | 52.6 | | 0.7 | | | | | 66.5 | 66.1 | 29.8 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 62.8 | | | 0.7 | | | 0.0 | | | 56.3 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 31.2 | | | |
| Intersection Capacity Utilization | | | 56.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 210 | 481 | 0 | 0 | 426 | 93 | 228 | 144 | 172 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.93 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2974 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2974 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 233 | 534 | 0 | 0 | 473 | 103 | 253 | 160 | 191 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 100 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 233 | 534 | 0 | 0 | 473 | 26 | 207 | 297 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 80.5 | 80.5 | | | 33.5 | 33.5 | 19.1 | 19.1 | | | | |
| Effective Green, g (s) | 80.5 | 80.5 | | | 33.5 | 33.5 | 19.1 | 19.1 | | | | |
| Actuated g/C Ratio | 0.50 | 0.50 | | | 0.21 | 0.21 | 0.12 | 0.12 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 792 | 1694 | | | 659 | 305 | 183 | 355 | | | | |
| v/s Ratio Prot | 0.15 | c0.16 | | | c0.15 | | c0.14 | 0.10 | | | | |
| v/s Ratio Perm | | | | | 0.02 | | | | | | | |
| v/c Ratio | 0.29 | 0.32 | | | 0.72 | 0.08 | 1.13 | 0.84 | | | | |
| Uniform Delay, d1 | 23.2 | 23.5 | | | 58.9 | 50.9 | 70.5 | 68.9 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 3.7 | 0.1 | 106.2 | 15.7 | | | | |
| Delay (s) | 1.7 | 1.7 | | | 62.6 | 51.0 | 176.6 | 84.6 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.7 | | | 60.5 | | 116.2 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 54.6 | | | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | 0.54 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 28.9 | | | |
| Intersection Capacity Utilization | 51.1% | | | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















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| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 214 | 444 | 73 | 56 | 185 | 54 | 86 | 803 | 146 | 90 | 426 | 99 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1327 | 1596 | 1724 | | 1524 | 2930 | | 1509 | 2870 | |
| Flt Permitted | 0.46 | 1.00 | 1.00 | 0.21 | 1.00 | | 0.36 | 1.00 | | 0.12 | 1.00 | |
| Satd. Flow (perm) | 751 | 1556 | 1327 | 360 | 1724 | | 571 | 2930 | | 197 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 225 | 467 | 77 | 59 | 195 | 57 | 91 | 845 | 154 | 95 | 448 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 12 | 0 | 0 | 17 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 225 | 467 | 25 | 59 | 240 | 0 | 91 | 982 | 0 | 95 | 530 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 341 | 527 | 435 | 188 | 536 | | 288 | 1118 | | 149 | 1095 | |
| v/s Ratio Prot | c0.04 | c0.30 | | 0.02 | 0.14 | | 0.02 | c0.34 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.21 | | 0.02 | 0.09 | | | 0.12 | | | 0.24 | | |
| v/c Ratio | 0.66 | 0.89 | 0.06 | 0.31 | 0.45 | | 0.32 | 0.88 | | 0.64 | 0.48 | |
| Uniform Delay, d1 | 22.4 | 27.9 | 20.6 | 21.0 | 24.7 | | 16.2 | 25.7 | | 18.5 | 21.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.6 | 19.3 | 0.3 | 1.0 | 2.7 | | 0.6 | 9.9 | | 8.6 | 1.5 | |
| Delay (s) | 27.0 | 47.2 | 20.8 | 22.0 | 27.4 | | 16.9 | 35.6 | | 27.2 | 22.5 | |
| Level of Service | C | D | C | C | C | | B | D | | C | C | |
| Approach Delay (s) | | 38.7 | | | 26.3 | | | 34.0 | | | 23.2 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 78.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 43 | 562 | 16 | 26 | 257 | 28 | 35 | 79 | 102 | 45 | 42 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.94 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1908 | 1482 | | 1599 | 1198 | | 1812 | | | 1821 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.93 | 1.00 | | 0.95 | | | 0.86 | |
| Satd. Flow (perm) | | 1845 | 1482 | | 1500 | 1198 | | 1732 | | | 1599 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 45 | 592 | 17 | 27 | 271 | 29 | 37 | 83 | 107 | 47 | 44 | 40 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 15 | 0 | 49 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 637 | 11 | 0 | 298 | 14 | 0 | 178 | 0 | 0 | 108 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 908 | 730 | | 738 | 590 | | 719 | | | 664 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.01 | | 0.20 | 0.01 | | c0.10 | | | 0.07 | |
| v/c Ratio | | 0.70 | 0.01 | | 0.40 | 0.02 | | 0.25 | | | 0.16 | |
| Uniform Delay, d1 | | 12.8 | 8.4 | | 10.5 | 8.5 | | 12.4 | | | 11.9 | |
| Progression Factor | | 1.00 | 1.00 | | 1.91 | 2.84 | | 1.00 | | | 1.35 | |
| Incremental Delay, d2 | | 4.5 | 0.0 | | 0.1 | 0.0 | | 0.8 | | | 0.5 | |
| Delay (s) | | 17.3 | 8.5 | | 20.1 | 24.1 | | 13.2 | | | 16.6 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 17.1 | | | 20.5 | | | 13.2 | | | 16.6 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 74.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 71 | 616 | 23 | 27 | 238 | 8 | 39 | 216 | 107 | 18 | 51 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1392 | | 1581 | 1497 | | 1754 | 1390 | | 1656 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.35 | 1.00 | | 0.95 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1549 | 1392 | | 562 | 1497 | | 1679 | 1390 | | 1560 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 648 | 24 | 28 | 251 | 8 | 41 | 227 | 113 | 19 | 54 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 43 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 723 | 17 | 0 | 279 | 3 | 0 | 268 | 70 | 0 | 88 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 548 | 493 | | 199 | 530 | | 827 | 684 | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | 0.01 | | c0.50 | 0.00 | | c0.16 | 0.05 | | 0.06 | |
| v/c Ratio | | 1.32 | 0.03 | | 1.40 | 0.01 | | 0.32 | 0.10 | | 0.11 | |
| Uniform Delay, d1 | | 21.0 | 13.7 | | 21.0 | 13.6 | | 10.0 | 8.8 | | 8.9 | |
| Progression Factor | | 1.60 | 1.78 | | 0.80 | 0.79 | | 0.39 | 0.26 | | 1.09 | |
| Incremental Delay, d2 | | 153.8 | 0.1 | | 207.4 | 0.0 | | 0.7 | 0.2 | | 0.3 | |
| Delay (s) | | 187.4 | 24.6 | | 224.1 | 10.8 | | 4.6 | 2.5 | | 9.9 | |
| Level of Service | | F | C | | F | B | | A | A | | A | |
| Approach Delay (s) | | 182.2 | | | 218.2 | | | 4.0 | | | 9.9 | |
| Approach LOS | | F | | | F | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 132.5 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 0.78 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 87.5% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

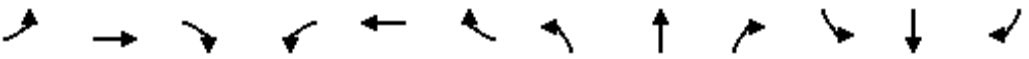
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 671 | 20 | 30 | 9 | 18 | 15 | 26 | 363 | 19 | 9 | 213 | 222 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.98 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1750 | 1390 | | 1761 | | | 1979 | | | 1873 | 1328 |
| Flt Permitted | | 0.72 | 1.00 | | 0.64 | | | 0.97 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1330 | 1390 | | 1140 | | | 1935 | | | 1847 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 746 | 22 | 33 | 10 | 20 | 17 | 29 | 403 | 21 | 10 | 237 | 247 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 13 | 0 | 0 | 3 | 0 | 0 | 0 | 125 |
| Lane Group Flow (vph) | 0 | 768 | 24 | 0 | 34 | 0 | 0 | 450 | 0 | 0 | 247 | 122 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 604 | 577 | | 298 | | | 953 | | | 909 | 654 |
| v/s Ratio Prot | | c0.16 | | | | | | | | | | |
| v/s Ratio Perm | | 0.37 | 0.02 | | 0.03 | | | c0.23 | | | 0.13 | 0.09 |
| v/c Ratio | | 1.27 | 0.04 | | 0.12 | | | 0.47 | | | 0.27 | 0.19 |
| Uniform Delay, d1 | | 19.0 | 11.3 | | 18.3 | | | 10.9 | | | 9.7 | 9.2 |
| Progression Factor | | 1.13 | 1.50 | | 1.00 | | | 0.60 | | | 0.52 | 1.01 |
| Incremental Delay, d2 | | 123.4 | 0.0 | | 0.8 | | | 1.6 | | | 0.1 | 0.1 |
| Delay (s) | | 144.9 | 17.0 | | 19.1 | | | 8.2 | | | 5.1 | 9.4 |
| Level of Service | | F | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 139.7 | | | 19.1 | | | 8.2 | | | 7.3 | |
| Approach LOS | | F | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 66.9 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 93.3% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013
























| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 983 | 220 | 269 | 1109 | 0 | 0 | 0 | 0 | 274 | 200 | 374 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.14 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 228 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1035 | 232 | 283 | 1167 | 0 | 0 | 0 | 0 | 288 | 211 | 394 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 64 |
| Lane Group Flow (vph) | 0 | 1237 | 0 | 283 | 1167 | 0 | 0 | 0 | 0 | 233 | 387 | 145 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 48.4 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Effective Green, g (s) | | 48.4 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Actuated g/C Ratio | | 0.46 | | 0.66 | 0.66 | | | | | 0.22 | 0.22 | 0.22 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1992 | | 365 | 2132 | | | | | 319 | 609 | 305 |
| v/s Ratio Prot | | 0.29 | | c0.12 | 0.36 | | | | | | | |
| v/s Ratio Perm | | | | c0.39 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.62 | | 0.78 | 0.55 | | | | | 0.73 | 0.63 | 0.47 |
| Uniform Delay, d1 | | 21.4 | | 18.0 | 9.5 | | | | | 37.7 | 36.8 | 35.3 |
| Progression Factor | | 1.00 | | 0.97 | 1.65 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 6.0 | 0.6 | | | | | 8.6 | 2.3 | 1.4 |
| Delay (s) | | 22.8 | | 23.5 | 16.1 | | | | | 46.3 | 39.1 | 36.7 |
| Level of Service | | C | | C | B | | | | | D | D | D |
| Approach Delay (s) | | 22.8 | | | 17.6 | | | 0.0 | | | 40.4 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 103.8% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |   | |    | | | | |
| Volume (vph) | 309 | 948 | 0 | 0 | 856 | 234 | 521 | 346 | 464 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4388 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 568 | 3138 | | | 3119 | 1449 | | 4388 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 325 | 998 | 0 | 0 | 901 | 246 | 548 | 364 | 488 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 104 | 0 | 90 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 325 | 998 | 0 | 0 | 901 | 142 | 0 | 1310 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.8 | 62.8 | | | 45.4 | 45.4 | | 30.2 | | | | |
| Effective Green, g (s) | 62.8 | 62.8 | | | 45.4 | 45.4 | | 30.2 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 595 | 1877 | | | 1349 | 627 | | 1262 | | | | |
| v/s Ratio Prot | 0.06 | c0.32 | | | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.27 | | | | | 0.10 | | 0.30 | | | | |
| v/c Ratio | 0.55 | 0.53 | | | 0.67 | 0.23 | | 1.04 | | | | |
| Uniform Delay, d1 | 12.8 | 12.4 | | | 23.8 | 18.7 | | 37.4 | | | | |
| Progression Factor | 0.66 | 0.83 | | | 0.95 | 1.45 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.9 | | | 1.7 | 0.5 | | 35.8 | | | | |
| Delay (s) | 9.4 | 11.1 | | | 24.3 | 27.7 | | 73.2 | | | | |
| Level of Service | A | B | | | C | C | | E | | | | |
| Approach Delay (s) | | 10.7 | | | 25.0 | | | 73.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | | HCM Level of Service | | D | | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | 18.0 | | | |
| Intersection Capacity Utilization | | | 103.8% | | | | ICU Level of Service | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 103 | 733 | 221 | 76 | 781 | 43 | 226 | 178 | 40 | 57 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1603 | 3233 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.36 | 1.00 | | 0.53 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 227 | 3061 | 1291 | 606 | 3233 | | 811 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 108 | 772 | 233 | 80 | 822 | 45 | 238 | 187 | 42 | 60 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 95 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 108 | 772 | 138 | 80 | 863 | 0 | 238 | 208 | 0 | 60 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.5 | 52.6 | 62.1 | 40.3 | 33.9 | | 29.8 | 20.3 | | 24.2 | 17.5 | |
| Effective Green, g (s) | 62.5 | 52.6 | 62.1 | 40.3 | 33.9 | | 29.8 | 20.3 | | 24.2 | 17.5 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.38 | 0.32 | | 0.28 | 0.19 | | 0.23 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 455 | 1533 | 764 | 293 | 1044 | | 288 | 581 | | 264 | 464 | |
| v/s Ratio Prot | c0.06 | c0.25 | 0.02 | 0.02 | c0.27 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.08 | | 0.09 | 0.09 | | | c0.16 | | | 0.04 | | |
| v/c Ratio | 0.24 | 0.50 | 0.18 | 0.27 | 0.83 | | 0.83 | 0.36 | | 0.23 | 0.29 | |
| Uniform Delay, d1 | 12.0 | 17.5 | 9.8 | 21.0 | 32.8 | | 33.7 | 36.7 | | 32.3 | 38.3 | |
| Progression Factor | 0.90 | 1.00 | 1.68 | 1.00 | 1.00 | | 0.94 | 0.89 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.8 | 0.1 | 0.5 | 7.5 | | 16.7 | 1.3 | | 0.4 | 1.2 | |
| Delay (s) | 11.7 | 18.4 | 16.6 | 21.5 | 40.3 | | 48.5 | 33.8 | | 32.8 | 39.5 | |
| Level of Service | B | B | B | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 17.4 | | | 38.7 | | | 41.3 | | | 38.0 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 72.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 59 | 323 | 273 | 57 | 190 | 98 | 328 | 380 | 83 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2920 | | 1463 | 3037 | | 1589 | 3237 | | 1549 | 3135 | |
| Flt Permitted | 0.54 | 1.00 | | 0.25 | 1.00 | | 0.46 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 931 | 2920 | | 389 | 3037 | | 772 | 3237 | | 774 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 340 | 287 | 60 | 200 | 103 | 345 | 400 | 87 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 139 | 0 | 0 | 60 | 0 | 0 | 17 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 62 | 488 | 0 | 60 | 243 | 0 | 345 | 470 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 363 | 798 | | 206 | 833 | | 530 | 1292 | | 338 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.02 | 0.08 | | c0.11 | 0.15 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.08 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.17 | 0.61 | | 0.29 | 0.29 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 33.3 | | 24.4 | 30.1 | | 16.6 | 22.2 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.06 | 0.94 | |
| Incremental Delay, d2 | 0.3 | 3.5 | | 0.9 | 0.9 | | 3.0 | 0.8 | | 0.5 | 0.9 | |
| Delay (s) | 24.0 | 36.8 | | 25.3 | 30.9 | | 19.6 | 23.0 | | 24.2 | 27.8 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 35.6 | | | 30.0 | | | 21.6 | | | 27.0 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 28.1 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.59 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | 71.2% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 165 | 706 | 79 | 6 | 449 | 111 | 65 | 577 | 7 | 100 | 309 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.99 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2929 | | | 2896 | | 1436 | 3185 | | 1450 | 2788 | |
| Flt Permitted | | 0.59 | | | 0.94 | | 0.43 | 1.00 | | 0.29 | 1.00 | |
| Satd. Flow (perm) | | 1740 | | | 2729 | | 654 | 3185 | | 448 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 183 | 784 | 88 | 7 | 499 | 123 | 72 | 641 | 8 | 111 | 343 | 111 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 33 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 1044 | 0 | 0 | 596 | 0 | 72 | 648 | 0 | 111 | 406 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 796 | | | 798 | | 310 | 1078 | | 241 | 944 | |
| v/s Ratio Prot | | c0.08 | | | | | 0.01 | c0.20 | | c0.03 | 0.15 | |
| v/s Ratio Perm | | c0.46 | | | 0.22 | | 0.08 | | | 0.16 | | |
| v/c Ratio | | 1.31 | | | 0.75 | | 0.23 | 0.60 | | 0.46 | 0.43 | |
| Uniform Delay, d1 | | 19.0 | | | 20.8 | | 12.4 | 17.9 | | 13.0 | 16.6 | |
| Progression Factor | | 1.00 | | | 1.52 | | 0.90 | 0.71 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 149.4 | | | 0.6 | | 1.6 | 2.3 | | 6.2 | 1.4 | |
| Delay (s) | | 168.4 | | | 32.3 | | 12.8 | 14.9 | | 19.2 | 18.1 | |
| Level of Service | | F | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 168.4 | | | 32.3 | | | 14.6 | | | 18.3 | |
| Approach LOS | | F | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 73.7 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.94 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 81.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 49 | 328 | 46 | 71 | 160 | 13 | 36 | 632 | 97 | 10 | 359 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1917 | | 1618 | 1943 | | 1658 | 3195 | | 1138 | 3197 | |
| Flt Permitted | 0.64 | 1.00 | | 0.40 | 1.00 | | 0.51 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | 1131 | 1917 | | 676 | 1943 | | 889 | 3195 | | 374 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 51 | 338 | 47 | 73 | 165 | 13 | 37 | 652 | 100 | 10 | 370 | 44 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 19 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 51 | 377 | 0 | 73 | 174 | 0 | 37 | 733 | 0 | 10 | 400 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 418 | 708 | | 250 | 717 | | 424 | 1524 | | 178 | 1525 | |
| v/s Ratio Prot | c0.20 | | | 0.09 | | | c0.23 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.11 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.12 | 0.53 | | 0.29 | 0.24 | | 0.09 | 0.48 | | 0.06 | 0.26 | |
| Uniform Delay, d1 | 13.5 | 16.1 | | 14.5 | 14.2 | | 9.3 | 11.5 | | 9.1 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.73 | 1.78 | | 1.00 | 1.00 | | 0.50 | 0.49 | |
| Incremental Delay, d2 | 0.6 | 2.9 | | 1.1 | 0.3 | | 0.4 | 1.1 | | 0.5 | 0.3 | |
| Delay (s) | 14.1 | 19.0 | | 26.2 | 25.6 | | 9.7 | 12.6 | | 5.0 | 5.3 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 18.4 | | | 25.8 | | | 12.5 | | | 5.3 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.0 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 67.3% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|-------|------|------|------|------|------|------|-------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 756 | 196 | 607 | 17 | 3 | 14 | 3 | 46 | 30 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.98 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | | 2954 | | | | 1732 | | | 1908 | | |
| Flt Permitted | 1.00 | | 0.55 | | | | 0.94 | | | 0.79 | | |
| Satd. Flow (perm) | 2956 | | 1639 | | | | 1643 | | | 1563 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 796 | 206 | 639 | 18 | 3 | 15 | 3 | 48 | 32 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 796 | 0 | 861 | 0 | 0 | 0 | 31 | 0 | 0 | 35 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | Perm | | | | Perm | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 802 | | | | 354 | | | 337 | | |
| v/s Ratio Prot | 0.27 | | c0.10 | | | | | | | | | |
| v/s Ratio Perm | | | c0.35 | | | | 0.02 | | | c0.02 | | |
| v/c Ratio | 0.97 | | 1.07 | | | | 0.09 | | | 0.10 | | |
| Uniform Delay, d1 | 23.2 | | 19.0 | | | | 20.4 | | | 20.5 | | |
| Progression Factor | 1.35 | | 0.76 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 4.9 | | 52.3 | | | | 0.5 | | | 0.6 | | |
| Delay (s) | 36.2 | | 66.7 | | | | 20.9 | | | 21.1 | | |
| Level of Service | D | | E | | | | C | | | C | | |
| Approach Delay (s) | 36.2 | | 66.7 | | | | 20.9 | | | 21.1 | | |
| Approach LOS | D | | E | | | | C | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 157.4 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.02 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 105.0% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

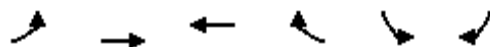


| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 450 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 474 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 475 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.33 | |
| v/s Ratio Perm | | |
| v/c Ratio | 2.16 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 0.78 | |
| Incremental Delay, d2 | 534.8 | |
| Delay (s) | 556.2 | |
| Level of Service | F | |
| Approach Delay (s) | 556.2 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 186 | 1147 | 665 | 79 | 139 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3235 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.67 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2166 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 207 | 1274 | 739 | 88 | 154 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1481 | 813 | 0 | 154 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1333 | 1972 | | 426 | 381 |
| v/s Ratio Prot | | | 0.25 | | c0.09 | |
| v/s Ratio Perm | | c0.68 | | | | 0.03 |
| v/c Ratio | | 1.11 | 0.41 | | 0.36 | 0.12 |
| Uniform Delay, d1 | | 12.5 | 6.4 | | 19.6 | 18.3 |
| Progression Factor | | 1.45 | 1.31 | | 0.90 | 0.81 |
| Incremental Delay, d2 | | 51.2 | 0.6 | | 2.4 | 0.6 |
| Delay (s) | | 69.3 | 9.0 | | 20.1 | 15.5 |
| Level of Service | | E | A | | C | B |
| Approach Delay (s) | | 69.3 | 9.0 | | 17.7 | |
| Approach LOS | | E | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 43.9 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.89 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 79.4% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 51 | 1214 | 685 | 196 | 170 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2921 | | 1464 | 1373 |
| Flt Permitted | | 0.88 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2581 | 2921 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 54 | 1278 | 721 | 206 | 179 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 40 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 1332 | 887 | 0 | 179 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1509 | 1708 | | 428 | 401 |
| v/s Ratio Prot | | | 0.30 | | c0.12 | |
| v/s Ratio Perm | | c0.52 | | | | 0.01 |
| v/c Ratio | | 0.88 | 0.52 | | 0.42 | 0.04 |
| Uniform Delay, d1 | | 11.6 | 8.1 | | 18.5 | 16.5 |
| Progression Factor | | 0.89 | 0.56 | | 0.94 | 1.37 |
| Incremental Delay, d2 | | 0.8 | 0.6 | | 2.9 | 0.2 |
| Delay (s) | | 11.1 | 5.1 | | 20.4 | 22.7 |
| Level of Service | | B | A | | C | C |
| Approach Delay (s) | | 11.1 | 5.1 | | 20.9 | |
| Approach LOS | | B | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 9.8 | | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | 0.73 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 83.5% | | ICU Level of Service | | E |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave

























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 1233 | 153 | 158 | 645 | 401 | 434 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.99 | | 1.00 | 1.00 | 0.93 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.98 | |
| Satd. Flow (prot) | 2248 | | 1770 | 2436 | 1746 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.98 | |
| Satd. Flow (perm) | 2248 | | 240 | 2436 | 1746 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1258 | 156 | 161 | 658 | 409 | 443 |
| RTOR Reduction (vph) | 7 | 0 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 1407 | 0 | 161 | 658 | 833 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1072 | | 114 | 1162 | 645 | |
| v/s Ratio Prot | 0.63 | | | 0.27 | c0.48 | |
| v/s Ratio Perm | | | c0.67 | | | |
| v/c Ratio | 1.31 | | 1.41 | 0.57 | 1.29 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 12.2 | 20.5 | |
| Progression Factor | 1.56 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 144.4 | | 229.3 | 2.0 | 142.6 | |
| Delay (s) | 170.8 | | 246.3 | 14.2 | 163.1 | |
| Level of Service | F | | F | B | F | |
| Approach Delay (s) | 170.8 | | | 59.8 | 163.1 | |
| Approach LOS | F | | | E | F | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 139.2 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.36 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 10.0 |
| Intersection Capacity Utilization | | 135.0% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   |  |  |   |  | |  |  | |   | |
| Volume (vph) | 1 | 695 | 85 | 251 | 1499 | 9 | 68 | 0 | 177 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.15 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.71 | |
| Satd. Flow (perm) | 290 | 3213 | 1422 | 459 | 3138 | 1366 | | 1309 | 1443 | | 722 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 772 | 94 | 279 | 1666 | 10 | 76 | 0 | 197 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 46 | 0 | 0 | 2 | 0 | 0 | 173 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 772 | 48 | 279 | 1666 | 8 | 0 | 76 | 24 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 43.7 | 43.7 | 43.7 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Effective Green, g (s) | 43.7 | 43.7 | 43.7 | 66.6 | 66.6 | 66.6 | | 10.4 | 10.4 | | 10.4 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 149 | 1652 | 731 | 624 | 2459 | 1070 | | 160 | 177 | | 88 | |
| v/s Ratio Prot | | 0.24 | | 0.10 | c0.53 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.03 | 0.25 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.01 | 0.47 | 0.07 | 0.45 | 0.68 | 0.01 | | 0.47 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 10.1 | 13.2 | 10.4 | 3.8 | 4.2 | 2.0 | | 34.8 | 33.3 | | 32.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.1 | 1.0 | 0.2 | 0.5 | 0.8 | 0.0 | | 2.2 | 0.4 | | 0.1 | |
| Delay (s) | 10.1 | 14.2 | 10.6 | 4.3 | 5.0 | 2.0 | | 37.0 | 33.6 | | 32.8 | |
| Level of Service | B | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 13.8 | | | 4.9 | | | 34.6 | | | 32.8 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.0 | | | | HCM Level of Service | | | A | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 62.1% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 12 | 777 | 808 | 43 | 23 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1481 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2842 | 3017 | | 1481 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 863 | 898 | 48 | 26 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 876 | 942 | 0 | 27 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1042 | 2145 | | 115 | |
| v/s Ratio Prot | | | c0.31 | | c0.02 | |
| v/s Ratio Perm | | c0.31 | | | | |
| v/c Ratio | | 0.84 | 0.44 | | 0.23 | |
| Uniform Delay, d1 | | 26.1 | 5.5 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 8.2 | 0.3 | | 4.7 | |
| Delay (s) | | 34.3 | 0.3 | | 43.7 | |
| Level of Service | | C | A | | D | |
| Approach Delay (s) | | 34.3 | 0.3 | | 43.7 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 17.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.63 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 42.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 89 | 422 | 1 | 26 | 554 | 78 | 0 | 0 | 1 | 43 | 3 | 133 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (prot) | | 1726 | | | 3231 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.77 | | | 0.93 | | | 1.00 | | | 0.94 | 1.00 |
| Satd. Flow (perm) | | 1338 | | | 3023 | | | 1432 | | | 1581 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 99 | 469 | 1 | 29 | 616 | 87 | 0 | 0 | 1 | 48 | 3 | 148 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 99 |
| Lane Group Flow (vph) | 0 | 569 | 0 | 0 | 720 | 0 | 0 | 0 | 0 | 0 | 51 | 49 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 488 | | | 1635 | | | 152 | | | 470 | 422 |
| v/s Ratio Prot | | | | | c0.07 | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | c0.43 | | | 0.16 | | | | | | 0.01 | c0.04 |
| v/c Ratio | | 1.17 | | | 0.44 | | | 0.00 | | | 0.11 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 12.3 | | | 34.0 | | | 21.9 | 19.9 |
| Progression Factor | | 1.00 | | | 1.76 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 95.1 | | | 0.1 | | | 0.0 | | | 0.5 | 0.6 |
| Delay (s) | | 122.1 | | | 21.7 | | | 34.0 | | | 22.3 | 20.4 |
| Level of Service | | F | | | C | | | C | | | C | C |
| Approach Delay (s) | | 122.1 | | | 21.7 | | | 34.0 | | | 20.9 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.6 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 997 | 57 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1556 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 286 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1049 | 60 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1103 | 0 | 0 | 93 | 0 | 0 | 121 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 150 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.27 | 0.41 | | 0.12 | 0.70 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.6 | 9.4 | | 7.9 | 11.6 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.38 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.5 | 0.8 | | 0.7 | 2.3 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.1 | 10.2 | | 6.2 | 18.4 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.0 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 787 | 5 | 31 | 619 | 40 | 0 | 0 | 0 | 578 | 88 | 375 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.92 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 790 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 336 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 828 | 5 | 33 | 652 | 42 | 0 | 0 | 0 | 608 | 93 | 395 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 168 |
| Lane Group Flow (vph) | 26 | 833 | 0 | 33 | 652 | 24 | 0 | 0 | 0 | 608 | 93 | 227 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 160 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.20 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.15 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.36 | 0.08 | | | | 0.80 | 0.23 | 0.66 |
| Uniform Delay, d1 | 31.6 | 38.6 | | 15.2 | 15.7 | 13.1 | | | | 47.2 | 40.6 | 45.4 |
| Progression Factor | 0.85 | 0.86 | | 0.34 | 0.75 | 1.27 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 8.8 | 1.4 | 9.8 |
| Delay (s) | 28.9 | 37.4 | | 5.2 | 12.2 | 17.0 | | | | 56.0 | 42.0 | 55.2 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.2 | | | 12.1 | | | 0.0 | | | 54.5 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 338 | 809 | 218 | 53 | 560 | 280 | 100 | 247 | 54 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 356 | 852 | 229 | 56 | 589 | 295 | 105 | 260 | 57 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 222 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 356 | 1063 | 0 | 56 | 589 | 73 | 0 | 365 | 15 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1707 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.62 | | 0.53 | 0.76 | 0.29 | | 0.51 | 0.05 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 21.9 | | 59.2 | 45.5 | 39.8 | | 45.0 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.94 | 0.17 | | 1.00 | 1.00 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.0 | 7.0 | 2.9 | | 2.6 | 0.3 | 49.7 | | 0.4 |
| Delay (s) | 30.5 | 4.7 | | 77.2 | 52.5 | 42.7 | | 45.3 | 41.0 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 50.9 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|--------|------|--------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | | ↑ | ↑ | ↑ | |
| Volume (vph) | 0 | 885 | 165 | 102 | 813 | 0 | 74 | 0 | 87 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 304 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 983 | 183 | 113 | 903 | 0 | 82 | 0 | 97 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1151 | 0 | 113 | 903 | 0 | 82 | 0 | 31 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 182 | 1889 | | 346 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | c0.38 | | | 0.29 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.37 | | | c0.08 | | 0.02 | | 0.01 | |
| v/c Ratio | | 0.64 | | 0.62 | 0.48 | | 0.24 | | 0.07 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 13.0 | | 12.7 | 11.2 | | 25.0 | | 23.6 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.8 | | 14.9 | 0.9 | | 1.6 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 14.7 | | 27.6 | 12.1 | | 26.6 | | 23.9 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.7 | | | 13.8 | | | 25.2 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |

Intersection Summary




















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 15.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.50 | | |
| Actuated Cycle Length (s) | 100.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 61.0% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street

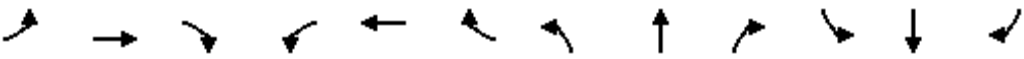






1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 291 | 0 | 1188 | 214 | 682 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 297 | 0 | 1212 | 218 | 696 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 297 | 0 | 1212 | 218 | 696 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.19 | | c0.79 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.65 | | 2.77 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.3 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.10 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.1 | | 804.4 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 39.4 | | 841.9 | 21.7 | 18.3 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 684.0 | | | 19.1 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 306.7 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 99.3% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|------|------|----------------------|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 324 | 770 | 145 | 0 | 0 | 0 | 0 | 572 | 403 | 355 | 727 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 334 | 794 | 149 | 0 | 0 | 0 | 0 | 590 | 415 | 366 | 749 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 301 | 962 | 0 | 0 | 0 | 0 | 0 | 590 | 415 | 366 | 749 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.14 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.18 | | | |
| v/c Ratio | 0.62 | 0.94 | | | | | | 0.51 | 0.69 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 30.0 | 34.5 | | | | | | 32.6 | 34.6 | 33.8 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.21 | |
| Incremental Delay, d2 | 5.7 | 17.2 | | | | | | 1.4 | 5.8 | 4.6 | 0.1 | |
| Delay (s) | 35.7 | 51.7 | | | | | | 38.5 | 45.2 | 33.7 | 2.3 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 48.0 | | | 0.0 | | | 41.3 | | | 12.6 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 99.3% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 287 | 25 | 24 | 11 | 157 | 0 | 0 | 147 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 979 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 319 | 28 | 27 | 12 | 174 | 0 | 0 | 163 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 319 | 37 | 0 | 12 | 174 | 0 | 0 | 168 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 636 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.09 | | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | 0.02 | 0.16 | | | 0.16 | |
| Uniform Delay, d1 | | | | 24.4 | 20.0 | | 10.5 | 8.0 | | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.05 | 1.17 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.8 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 29.2 | 20.1 | | 11.1 | 9.6 | | | 10.1 | |
| Level of Service | | | | C | C | | B | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 27.9 | | | 9.7 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 36.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 6 | 0 | 14 | 0 | 142 | 43 | 46 | 389 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1571 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1515 | 1735 | | | 1529 | | | 1718 | | 1004 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 6 | 0 | 15 | 0 | 149 | 45 | 48 | 409 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 11 | 0 | 0 | 181 | 0 | 48 | 409 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 4 | | 8 | | 8 | | 2 | | 1 | | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | 6 | | 6 | | 6 | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 481 | 551 | | | 486 | | | 808 | | 639 | 1094 | |
| v/s Ratio Prot | c0.01 | | | | | | 0.11 | | 0.01 | | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | 0.04 | | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.22 | | 0.08 | 0.37 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.3 | | 8.6 | 9.2 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.97 | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.0 | | 8.6 | 8.9 | |
| Level of Service | C | C | | | C | | | B | | A | A | |
| Approach Delay (s) | 20.1 | | | | 20.0 | | 14.0 | | | | 8.9 | |
| Approach LOS | C | | | | C | | B | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 41.6% | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 46 | 40 | 12 | 183 | 273 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1753 | | 1765 | 1782 | 1656 | |
| Flt Permitted | 0.97 | | 0.52 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1753 | | 966 | 1782 | 1656 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 44 | 13 | 203 | 303 | 30 |
| RTOR Reduction (vph) | 30 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 65 | 0 | 13 | 203 | 328 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 535 | 987 | 917 | |
| v/s Ratio Prot | c0.04 | | | 0.11 | c0.20 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.02 | 0.21 | 0.36 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.3 | 8.1 | |
| Progression Factor | 1.00 | | 0.49 | 0.61 | 1.44 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 0.9 | |
| Delay (s) | 15.9 | | 3.3 | 4.9 | 12.6 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.8 | 12.6 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.4 | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | | 0.27 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 28.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 265 | 9 | 257 | 130 | 2 | 0 | 277 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 0.99 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3771 | | 1693 | 1677 | | | 1738 | 1428 |
| Flt Permitted | | | | | 0.99 | | 0.48 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3771 | | 854 | 1677 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 294 | 10 | 286 | 144 | 2 | 0 | 308 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 335 | 0 | 286 | 146 | 0 | 0 | 308 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1153 | | 611 | 1006 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.09 | | | 0.18 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.47 | 0.14 | | | 0.40 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 13.5 | 7.4 | | | 15.8 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.6 | 0.3 | | | 1.5 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.1 | 7.7 | | | 17.3 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.3 | | | 17.1 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 53.8% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 207 | 32 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3282 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3282 | | 1056 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 230 | 36 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 16 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 250 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1488 | | 638 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 277 | 24 | 159 | 590 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3173 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 599 | 3173 | | 1004 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 292 | 25 | 167 | 621 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 309 | 0 | 167 | 666 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 562 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 35 | 182 | 64 | 240 | 558 | 77 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 39 | 202 | 71 | 267 | 620 | 86 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 241 | 160 | 178 | 413 | 292 | |
| Volume Left (vph) | 39 | 71 | 0 | 0 | 0 | |
| Volume Right (vph) | 202 | 0 | 0 | 0 | 86 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.7 | 6.4 | 6.2 | 5.8 | 5.6 | |
| Degree Utilization, x | 0.38 | 0.29 | 0.31 | 0.66 | 0.45 | |
| Capacity (veh/h) | 598 | 538 | 557 | 611 | 632 | |
| Control Delay (s) | 12.1 | 10.8 | 10.7 | 18.2 | 11.9 | |
| Approach Delay (s) | 12.1 | 10.7 | | 15.6 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.7 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 51.7% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 376 | 18 | 22 | 405 | 75 | 77 | 55 | 68 | 351 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3250 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 932 | 1731 | 1421 | | | 257 | 3250 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 418 | 20 | 24 | 450 | 83 | 86 | 61 | 76 | 390 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 36 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 418 | 8 | 24 | 450 | 133 | 0 | 0 | 137 | 419 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 222 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.26 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.03 | | 0.09 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.58 | 0.01 | 0.11 | 1.09 | 0.39 | | | 1.99 | 0.48 | |
| Uniform Delay, d1 | | 21.6 | 23.4 | 17.8 | 31.3 | 40.0 | 33.6 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.3 | 0.0 | 1.0 | 71.5 | 3.4 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.5 | 26.7 | 17.9 | 32.3 | 111.5 | 37.1 | | | 529.5 | 34.3 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.9 | | | 89.0 | | | | | 154.8 | |
| Approach LOS | | | C | | | F | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 138.7 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 102.2% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 106 | 559 | 80 | 101 | 4 | 110 | 587 | 190 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 675 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 118 | 621 | 89 | 112 | 4 | 122 | 652 | 211 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 118 | 810 | 0 | 0 | 0 | 126 | 837 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 177 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.07 | | |
| v/s Ratio Perm | 0.17 | | | | | | c0.32 | |
| v/c Ratio | 0.67 | 0.95 | | | | 0.38 | 1.63 | |
| Uniform Delay, d1 | 34.7 | 38.1 | | | | 36.7 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 18.1 | 21.4 | | | | 3.2 | 291.8 | |
| Delay (s) | 52.8 | 59.5 | | | | 39.9 | 334.0 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 58.7 | | | | 296.6 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 64 | 588 | 0 | 0 | 482 | 59 | 83 | 51 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1951 | | | 1839 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1526 | | | 1951 | | | 1839 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 653 | 0 | 0 | 536 | 66 | 92 | 57 | 22 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 724 | 0 | 0 | 602 | 0 | 0 | 171 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 939 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.31 | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.77 | | | 0.50 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.1 | | | 7.0 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.1 | | | 1.5 | | | 2.0 | | | | |
| Delay (s) | | 15.2 | | | 8.4 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 15.2 | | | 8.4 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | ↘ | ↗ | ↘ | ↘ | ↗ | ↘ |
| Volume (vph) | 69 | 333 | 149 | 126 | 350 | 154 | 103 | 625 | 83 | 143 | 751 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1982 | 1434 | | 1947 | 1444 | 1546 | 3040 | 1296 | 1505 | 3069 | 1252 |
| Flt Permitted | | 0.33 | 1.00 | | 0.71 | 1.00 | 0.23 | 1.00 | 1.00 | 0.30 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 662 | 1434 | | 1410 | 1444 | 379 | 3040 | 1296 | 468 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 73 | 351 | 157 | 133 | 368 | 162 | 108 | 658 | 87 | 151 | 791 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 93 | 0 | 0 | 116 | 0 | 0 | 52 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 424 | 64 | 0 | 501 | 46 | 108 | 658 | 35 | 151 | 791 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 397 | 587 | | 403 | 413 | 275 | 1225 | 522 | 315 | 1248 | 509 |
| v/s Ratio Prot | | c0.10 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.34 | 0.04 | | c0.36 | 0.03 | 0.16 | | 0.03 | 0.20 | | 0.04 |
| v/c Ratio | | 1.07 | 0.11 | | 1.24 | 0.11 | 0.39 | 0.54 | 0.07 | 0.48 | 0.63 | 0.10 |
| Uniform Delay, d1 | | 31.0 | 19.2 | | 37.5 | 27.7 | 16.4 | 23.9 | 19.2 | 16.0 | 24.9 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.77 | 1.56 | 2.70 |
| Incremental Delay, d2 | | 64.4 | 0.4 | | 128.8 | 0.5 | 0.9 | 1.7 | 0.2 | 1.1 | 2.4 | 0.4 |
| Delay (s) | | 95.4 | 19.5 | | 166.3 | 28.2 | 17.3 | 25.6 | 19.5 | 29.4 | 41.1 | 52.3 |
| Level of Service | | F | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 74.9 | | | 132.6 | | | 23.9 | | | 40.5 | |
| Approach LOS | | E | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.8 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 90.6% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 83 | 409 | 83 | 94 | 522 | 90 | 49 | 59 | 69 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1649 | | | 1796 | | | | |
| Flt Permitted | | 0.83 | | | 0.86 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1373 | | | 1422 | | | 1796 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 92 | 454 | 92 | 104 | 580 | 100 | 54 | 66 | 77 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 8 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 629 | 0 | 0 | 776 | 0 | 0 | 162 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 845 | | | 875 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.46 | | | 0.55 | | | 0.09 | | | | |
| v/c Ratio | | 0.74 | | | 0.89 | | | 0.34 | | | | |
| Uniform Delay, d1 | | 8.9 | | | 10.6 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.9 | | | 12.9 | | | 2.0 | | | | |
| Delay (s) | | 14.8 | | | 23.4 | | | 21.5 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 14.8 | | | 23.4 | | | 21.5 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 53 | 483 | 81 | 74 | 511 | 36 | 38 | 76 | 72 | 53 | 235 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1685 | 1382 | | 1713 | 1417 | | 1685 | 1455 | | 1877 | |
| Flt Permitted | | 0.90 | 1.00 | | 0.85 | 1.00 | | 0.83 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1531 | 1382 | | 1473 | 1417 | | 1417 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 508 | 85 | 78 | 538 | 38 | 40 | 80 | 76 | 56 | 247 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 36 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 49 | 0 | 616 | 26 | 0 | 120 | 24 | 0 | 352 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 878 | 792 | | 845 | 812 | | 453 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.37 | 0.04 | | 0.42 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.64 | 0.06 | | 0.73 | 0.03 | | 0.26 | 0.05 | | 0.62 | |
| Uniform Delay, d1 | | 10.8 | 7.1 | | 11.7 | 7.0 | | 18.9 | 17.6 | | 21.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.6 | 0.1 | | 5.5 | 0.1 | | 1.4 | 0.2 | | 5.0 | |
| Delay (s) | | 14.4 | 7.2 | | 17.2 | 7.0 | | 20.4 | 17.8 | | 26.7 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.5 | | | 16.6 | | | 19.4 | | | 26.7 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.8 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.69 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 99.5% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 490 | 34 | 44 | 523 | 52 | 45 | 165 | 55 | 117 | 199 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1532 | 3066 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.36 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 579 | 3066 | | 680 | 3730 | | 977 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 544 | 38 | 49 | 581 | 58 | 50 | 183 | 61 | 130 | 221 | 34 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 20 |
| Lane Group Flow (vph) | 66 | 574 | 0 | 49 | 627 | 0 | 50 | 183 | 24 | 130 | 221 | 14 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 276 | 1462 | | 324 | 1779 | | 391 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.19 | | | 0.17 | | | 0.11 | | | c0.13 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.05 | | 0.02 | 0.12 | | 0.01 |
| v/c Ratio | 0.24 | 0.39 | | 0.15 | 0.35 | | 0.13 | 0.28 | 0.04 | 0.31 | 0.33 | 0.02 |
| Uniform Delay, d1 | 10.0 | 10.9 | | 9.6 | 10.7 | | 12.3 | 13.1 | 11.9 | 13.4 | 13.5 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.86 | 0.91 | 0.79 | 0.59 | 0.59 | 0.27 |
| Incremental Delay, d2 | 2.0 | 0.8 | | 1.0 | 0.6 | | 0.7 | 1.0 | 0.2 | 1.9 | 1.3 | 0.1 |
| Delay (s) | 12.1 | 11.7 | | 10.6 | 11.2 | | 11.2 | 13.0 | 9.6 | 9.8 | 9.3 | 3.3 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.8 | | | 11.2 | | | 12.0 | | | 8.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 421 | 81 | 70 | 378 | 64 | 57 | 179 | 64 | 87 | 240 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1327 | 3137 | | 1520 | 3130 | | 1579 | 2918 | | 1452 | 2998 | |
| Flt Permitted | 0.46 | 1.00 | | 0.42 | 1.00 | | 0.54 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 637 | 3137 | | 667 | 3130 | | 891 | 2918 | | 908 | 2998 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 443 | 85 | 74 | 398 | 67 | 60 | 188 | 67 | 92 | 253 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 528 | 0 | 74 | 465 | 0 | 60 | 216 | 0 | 92 | 293 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 306 | 1506 | | 320 | 1502 | | 368 | 1206 | | 375 | 1239 | |
| v/s Ratio Prot | c0.17 | | | 0.15 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.11 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.35 | | 0.23 | 0.31 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.3 | 12.2 | | 11.4 | 11.9 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.5 | 0.6 | | 1.7 | 0.5 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.8 | 12.8 | | 13.1 | 12.4 | | 14.8 | 14.3 | | 15.9 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.5 | | | 14.4 | | | 15.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 98 | 436 | 61 | 31 | 504 | 46 | 82 | 194 | 57 | 76 | 473 | 110 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1594 | 1652 | | 1369 | 1974 | | 1534 | 2998 | | 1534 | 3012 | |
| Flt Permitted | 0.26 | 1.00 | | 0.31 | 1.00 | | 0.28 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 439 | 1652 | | 454 | 1974 | | 451 | 2998 | | 951 | 3012 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 459 | 64 | 33 | 531 | 48 | 86 | 204 | 60 | 80 | 498 | 116 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 103 | 523 | 0 | 33 | 579 | 0 | 86 | 264 | 0 | 80 | 614 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 44.0 | 39.4 | | 40.8 | 37.8 | | 26.6 | 21.8 | | 26.6 | 21.8 | |
| Effective Green, g (s) | 44.0 | 37.4 | | 40.8 | 35.8 | | 26.6 | 19.8 | | 26.6 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 290 | 727 | | 250 | 831 | | 202 | 698 | | 331 | 702 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.29 | | c0.02 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.16 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.36 | 0.72 | | 0.13 | 0.70 | | 0.43 | 0.38 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 22.4 | 19.5 | | 19.9 | 20.2 | | 29.1 | 27.4 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 6.1 | | 0.2 | 4.8 | | 1.4 | 1.6 | | 0.4 | 14.3 | |
| Delay (s) | 23.2 | 25.6 | | 20.1 | 25.0 | | 30.5 | 29.0 | | 22.3 | 45.7 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 25.2 | | | 24.7 | | | 29.4 | | | 43.0 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 78.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 75 | 385 | 63 | 111 | 484 | 112 | 64 | 150 | 55 | 121 | 348 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3131 | | 1652 | 3237 | | 1549 | 3026 | |
| Flt Permitted | | 0.73 | | | 0.74 | | 0.44 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | | 2691 | | | 2321 | | 766 | 3237 | | 994 | 3026 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 428 | 70 | 123 | 538 | 124 | 71 | 167 | 61 | 134 | 387 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 581 | 0 | 0 | 785 | 0 | 71 | 228 | 0 | 134 | 474 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1220 | | | 1052 | | 337 | 1424 | | 437 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.22 | | | c0.34 | | 0.09 | | | 0.13 | | |
| v/c Ratio | | 0.48 | | | 0.75 | | 0.21 | 0.16 | | 0.31 | 0.36 | |
| Uniform Delay, d1 | | 14.3 | | | 16.9 | | 13.0 | 12.7 | | 13.6 | 13.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 4.8 | | 1.4 | 0.2 | | 1.8 | 0.7 | |
| Delay (s) | | 15.6 | | | 21.8 | | 14.4 | 12.9 | | 15.4 | 14.7 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.6 | | | 21.8 | | | 13.2 | | | 14.8 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.4% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

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|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 93 | 833 | 6 | 19 | 555 | 236 | 1 | 1 | 9 | 202 | 1 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.40 | 1.00 | | 0.27 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 678 | 3206 | | 466 | 3320 | 1485 | | 1519 | | | 2535 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 103 | 926 | 7 | 21 | 617 | 262 | 1 | 1 | 10 | 224 | 1 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 7 | 0 | 0 | 53 | 0 |
| Lane Group Flow (vph) | 103 | 933 | 0 | 21 | 617 | 166 | 0 | 5 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 430 | 2033 | | 295 | 2105 | 942 | | 389 | | | 649 | |
| v/s Ratio Prot | c0.29 | | | 0.19 | | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.05 | | 0.11 | | 0.00 | | | c0.10 | |
| v/c Ratio | 0.24 | 0.46 | | 0.07 | 0.29 | 0.18 | | 0.01 | | | 0.39 | |
| Uniform Delay, d1 | 5.7 | 6.9 | | 5.1 | 6.0 | 5.5 | | 20.2 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.3 | 0.7 | | 0.5 | 0.4 | 0.4 | | 0.1 | | | 1.7 | |
| Delay (s) | 7.1 | 7.6 | | 5.6 | 6.3 | 5.9 | | 20.2 | | | 24.1 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 7.6 | | | 6.2 | | | | 20.2 | | | 24.1 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.3 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.44 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 72.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 124 | 216 | 118 | 94 | 162 | 56 | 140 | 876 | 87 | 124 | 816 | 103 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1505 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.24 | 1.00 | | 0.21 | 1.00 | 1.00 | 0.18 | 1.00 | 1.00 |
| Satd. Flow (perm) | 746 | 1505 | | 396 | 1585 | | 323 | 3069 | 1337 | 285 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 131 | 227 | 124 | 99 | 171 | 59 | 147 | 922 | 92 | 131 | 859 | 108 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 131 | 328 | 0 | 99 | 215 | 0 | 147 | 922 | 52 | 131 | 859 | 57 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 286 | 390 | | 204 | 410 | | 235 | 1264 | 551 | 222 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.22 | | c0.03 | 0.14 | | c0.04 | c0.30 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.25 | | 0.04 | 0.24 | | 0.04 |
| v/c Ratio | 0.46 | 0.84 | | 0.49 | 0.52 | | 0.63 | 0.73 | 0.09 | 0.59 | 0.67 | 0.11 |
| Uniform Delay, d1 | 22.5 | 29.8 | | 22.7 | 27.0 | | 14.6 | 21.0 | 15.3 | 14.7 | 20.3 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.82 | 0.55 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.2 | 19.2 | | 8.0 | 4.7 | | 10.9 | 3.4 | 0.3 | 11.0 | 2.9 | 0.4 |
| Delay (s) | 27.7 | 49.1 | | 30.7 | 31.8 | | 20.7 | 20.6 | 8.7 | 25.7 | 23.2 | 15.8 |
| Level of Service | C | D | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 43.3 | | | 31.5 | | | 19.7 | | | 22.8 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 179 | 35 | 20 | 173 | 21 | 24 | 141 | 38 | 47 | 251 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1838 | | | 1849 | | | 1938 | | | 1974 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | | 1783 | | | 1791 | | | 1838 | | | 1870 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 185 | 36 | 21 | 178 | 22 | 25 | 145 | 39 | 48 | 259 | 51 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 235 | 0 | 0 | 215 | 0 | 0 | 196 | 0 | 0 | 349 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 741 | | | 744 | | | 848 | | | 863 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.23 | | | 0.40 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.5 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.69 | | | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.6 | | | 1.4 | |
| Delay (s) | | 13.9 | | | 9.7 | | | 13.1 | | | 13.0 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 13.9 | | | 9.7 | | | 13.1 | | | 13.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | | | B | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 52.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 190 | 38 | 25 | 180 | 19 | 49 | 199 | 31 | 42 | 206 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3058 | | 1576 | 3119 | | 1518 | 3119 | | 1550 | 3075 | |
| Flt Permitted | 0.61 | 1.00 | | 0.60 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3058 | | 987 | 3119 | | 935 | 3119 | | 969 | 3075 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 211 | 42 | 28 | 200 | 21 | 54 | 221 | 34 | 47 | 229 | 42 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 27 | 228 | 0 | 28 | 209 | 0 | 54 | 241 | 0 | 47 | 254 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 289 | 912 | | 547 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.07 | | | 0.07 | | | 0.08 | | | c0.08 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.14 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.96 | | 0.76 | 0.76 | | 1.32 | 1.33 | | 0.40 | 0.36 | |
| Incremental Delay, d2 | 0.7 | 0.7 | | 0.7 | 0.6 | | 0.3 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.3 | 17.6 | | 13.4 | 13.8 | | 8.2 | 8.2 | | 2.6 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.4 | | | 13.8 | | | 8.2 | | | 2.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 66 | 165 | 40 | 24 | 153 | 37 | 27 | 245 | 16 | 40 | 321 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3060 | | 1525 | 2936 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.62 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1014 | 3060 | | 979 | 2936 | | | 1822 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 183 | 44 | 27 | 170 | 41 | 30 | 272 | 18 | 44 | 357 | 37 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 73 | 201 | 0 | 27 | 186 | 0 | 0 | 317 | 0 | 0 | 433 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 406 | 1224 | | 392 | 1174 | | | 869 | | | 878 | |
| v/s Ratio Prot | 0.07 | | | 0.06 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.17 | | | c0.24 | | |
| v/c Ratio | 0.18 | 0.16 | | 0.07 | 0.16 | | | 0.36 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.05 | 0.99 | | 0.77 | 0.76 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.2 | 12.7 | | 9.6 | 9.8 | | | 11.8 | | | 13.6 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 13.0 | | | 9.8 | | | 11.8 | | | 13.6 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.3 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 57.4% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 19 | 153 | 26 | 40 | 230 | 11 | 33 | 360 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.58 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 1013 | 1970 | | 1087 | 1975 | | | 1800 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 21 | 170 | 29 | 44 | 256 | 12 | 37 | 400 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 21 | 199 | 0 | 0 | 312 | 0 | 0 | 500 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 312 | 606 | | 334 | 608 | | | 1025 | | | 1088 | |
| v/s Ratio Prot | | 0.08 | | | c0.10 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.17 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.06 | 0.33 | | | 0.30 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.3 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.82 | 0.81 | | 0.93 | 0.93 | | | 0.98 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 1.0 | | 0.4 | 1.4 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.7 | 14.6 | | 15.1 | 17.5 | | | 7.9 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.6 | | | 17.3 | | | 7.9 | | | 9.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 56.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 51 | 12 | 92 | 2 | 5 | 10 | 59 | 223 | 5 | 5 | 442 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1726 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1726 | | 1224 | 1808 | | 693 | 1647 | 1428 | 1049 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 13 | 102 | 2 | 6 | 11 | 66 | 248 | 6 | 6 | 491 | 80 |
| RTOR Reduction (vph) | 0 | 74 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 57 | 41 | 0 | 2 | 9 | 0 | 66 | 248 | 4 | 6 | 491 | 52 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 339 | 501 | | 416 | 988 | 857 | 629 | 1200 | 898 |
| v/s Ratio Prot | | 0.02 | | | 0.01 | | | 0.15 | | | c0.25 | |
| v/s Ratio Perm | c0.04 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.15 | 0.09 | | 0.01 | 0.02 | | 0.16 | 0.25 | 0.00 | 0.01 | 0.41 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.7 | 6.1 | 5.2 | 5.2 | 6.9 | 5.4 |
| Progression Factor | 1.41 | 2.82 | | 1.00 | 1.00 | | 0.80 | 0.75 | 0.92 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.0 | 0.1 | | 0.6 | 0.5 | 0.0 | 0.0 | 1.0 | 0.1 |
| Delay (s) | 25.9 | 49.5 | | 17.1 | 17.1 | | 5.2 | 5.1 | 4.8 | 5.3 | 7.9 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 41.7 | | | 17.1 | | | 5.1 | | | 7.6 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 51.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 253 | 163 | 177 | 203 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 186 | 214 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 186 | 214 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.11 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.33 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.5 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.22 | 2.15 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.4 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 31.2 | 23.9 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 27.3 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 61.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 307 | 113 | 73 | 511 | 221 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 629 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 323 | 119 | 77 | 538 | 233 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 164 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 405 | 0 | 77 | 538 | 69 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 702 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.04 | c0.30 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.56 | | 0.15 | 1.03 | 0.15 | | | |
| Uniform Delay, d1 | 10.3 | 8.0 | | | 33.0 | | 26.6 | 36.0 | 26.6 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.1 | | | 3.1 | | 0.6 | 46.3 | 0.7 | | | |
| Delay (s) | 4.9 | 3.6 | | | 36.1 | | 27.2 | 82.3 | 27.3 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 36.1 | | | 62.2 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.0 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 61.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 488 | 455 | 77 | 507 | 0 | 0 | 0 | 0 | 11 | 434 | 285 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3098 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.12 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3098 | | 207 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 508 | 474 | 80 | 528 | 0 | 0 | 0 | 0 | 11 | 452 | 297 |
| RTOR Reduction (vph) | 0 | 169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 196 |
| Lane Group Flow (vph) | 0 | 813 | 0 | 80 | 528 | 0 | 0 | 0 | 0 | 11 | 452 | 101 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 382 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.26 | | 0.04 | c0.16 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.73 | | 0.21 | 0.28 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 27.8 | | 13.9 | 10.5 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.2 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 32.0 | | 15.0 | 12.8 | | | | | 22.0 | 26.6 | 24.2 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 32.0 | | | 13.1 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 398 | 101 | 0 | 0 | 142 | 6 | 441 | 456 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.66 | 0.72 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1014 | 2315 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 410 | 104 | 0 | 0 | 146 | 6 | 455 | 470 | 57 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 36 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 205 | 309 | 0 | 0 | 149 | 0 | 455 | 470 | 21 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 681 | 1467 | | | 475 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.29 | 0.28 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.21 | | | 0.31 | | 0.79 | 0.77 | 0.04 | | | |
| Uniform Delay, d1 | 14.0 | 13.4 | | | 37.9 | | 28.1 | 27.7 | 20.1 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.7 | | 10.7 | 9.0 | 0.1 | | | |
| Delay (s) | 4.3 | 3.8 | | | 39.6 | | 38.7 | 36.7 | 20.2 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 4.0 | | | 39.6 | | | 36.7 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.7 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | Sum of lost time (s) | | | 12.0 | | | | | |
| Intersection Capacity Utilization | | | 89.6% | ICU Level of Service | | | E | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 78 | 219 | 102 | 149 | 263 | 117 | 80 | 663 | 83 | 101 | 875 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2940 | | | 2929 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.73 | | | 0.72 | | 0.16 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2159 | | | 2151 | | 261 | 3069 | 1309 | 433 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 228 | 106 | 155 | 274 | 122 | 83 | 691 | 86 | 105 | 911 | 67 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 31 | 0 | 0 | 0 | 53 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 375 | 0 | 0 | 520 | 0 | 83 | 691 | 33 | 105 | 911 | 34 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 970 | | | 709 | | 169 | 1210 | 508 | 234 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.23 | | 0.02 | c0.29 | |
| v/s Ratio Perm | | 0.14 | | | c0.24 | | 0.18 | | 0.03 | 0.17 | | 0.03 |
| v/c Ratio | | 0.39 | | | 0.73 | | 0.49 | 0.57 | 0.07 | 0.45 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.9 | | | 25.2 | | 16.6 | 20.1 | 16.3 | 15.8 | 22.1 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.31 | 0.68 | 0.54 | 1.11 | 1.17 | 1.77 |
| Incremental Delay, d2 | | 1.2 | | | 6.6 | | 9.3 | 1.8 | 0.2 | 4.5 | 3.1 | 0.2 |
| Delay (s) | | 18.0 | | | 31.8 | | 30.9 | 15.6 | 9.1 | 22.0 | 28.9 | 29.2 |
| Level of Service | | B | | | C | | C | B | A | C | C | C |
| Approach Delay (s) | | 18.0 | | | 31.8 | | | 16.5 | | | 28.3 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 73.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 327 | 0 | 0 | 410 | 85 | 52 | 43 | 33 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1707 | | | 1653 | | | | |
| Flt Permitted | | 0.84 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1462 | | | 1707 | | | 1653 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 363 | 0 | 0 | 456 | 94 | 58 | 48 | 37 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 447 | 0 | 0 | 539 | 0 | 0 | 124 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 855 | | | 998 | | | 483 | | | | |
| v/s Ratio Prot | | | | | c0.32 | | | | | | | |
| v/s Ratio Perm | | 0.31 | | | | | | 0.07 | | | | |
| v/c Ratio | | 0.52 | | | 0.54 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.1 | | | 8.2 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.72 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.3 | | | 1.9 | | | 1.3 | | | | |
| Delay (s) | | 10.4 | | | 7.8 | | | 18.9 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.4 | | | 7.8 | | | 18.9 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 68.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 21 | 384 | 39 | 37 | 356 | 48 | 30 | 112 | 37 | 52 | 148 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1955 | | | 1941 | | | 2968 | | | 2983 | |
| Flt Permitted | | 0.97 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1901 | | | 1828 | | | 2648 | | | 2598 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 23 | 427 | 43 | 41 | 396 | 53 | 33 | 124 | 41 | 58 | 164 | 48 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 24 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 0 | 488 | 0 | 0 | 484 | 0 | 0 | 174 | 0 | 0 | 242 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 877 | | | 844 | | | 1100 | | | 1079 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.26 | | | 0.07 | | | 0.09 | |
| v/c Ratio | | 0.56 | | | 0.57 | | | 0.16 | | | 0.22 | |
| Uniform Delay, d1 | | 12.7 | | | 12.8 | | | 11.9 | | | 12.2 | |
| Progression Factor | | 0.61 | | | 0.41 | | | 1.11 | | | 0.44 | |
| Incremental Delay, d2 | | 2.4 | | | 2.5 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 10.1 | | | 7.8 | | | 13.5 | | | 5.8 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 10.1 | | | 7.8 | | | 13.5 | | | 5.8 | |
| Approach LOS | | B | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 9.0 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.41 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 74.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 330 | 49 | 78 | 448 | 82 | 45 | 217 | 97 | 79 | 215 | 61 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3036 | | 1573 | 3078 | | 1587 | 2962 | | 1585 | 3071 | |
| Flt Permitted | 0.33 | 1.00 | | 0.46 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 529 | 3036 | | 760 | 3078 | | 944 | 2962 | | 905 | 3071 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 367 | 54 | 87 | 498 | 91 | 50 | 241 | 108 | 88 | 239 | 68 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 23 | 0 | 0 | 50 | 0 | 0 | 31 | 0 |
| Lane Group Flow (vph) | 57 | 403 | 0 | 87 | 566 | 0 | 50 | 299 | 0 | 88 | 276 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 179 | 1028 | | 257 | 1042 | | 508 | 1595 | | 487 | 1654 | |
| v/s Ratio Prot | | 0.13 | | | c0.18 | | | c0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.05 | | | 0.10 | | |
| v/c Ratio | 0.32 | 0.39 | | 0.34 | 0.54 | | 0.10 | 0.19 | | 0.18 | 0.17 | |
| Uniform Delay, d1 | 15.9 | 16.4 | | 16.1 | 17.4 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.69 | 0.67 | | 0.94 | 0.93 | | 0.95 | 0.98 | | 1.10 | 1.10 | |
| Incremental Delay, d2 | 4.1 | 1.0 | | 3.5 | 2.0 | | 0.4 | 0.3 | | 0.8 | 0.2 | |
| Delay (s) | 15.1 | 11.9 | | 18.5 | 18.2 | | 7.3 | 7.8 | | 9.3 | 8.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.3 | | | 18.3 | | | 7.7 | | | 8.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.7 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.32 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 50.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 348 | 78 | 83 | 399 | 48 | 45 | 226 | 57 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1508 | 3018 | | 1430 | 3722 | | | 3485 | | | 3521 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 730 | 3018 | | 715 | 3722 | | | 3031 | | | 3122 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 366 | 82 | 87 | 420 | 51 | 47 | 238 | 60 | 48 | 294 | 67 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 14 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 419 | 0 | 87 | 457 | 0 | 0 | 318 | 0 | 0 | 384 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 348 | 1439 | | 341 | 1775 | | | 1212 | | | 1249 | |
| v/s Ratio Prot | | c0.14 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.12 | | | | 0.10 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.29 | | 0.26 | 0.26 | | | 0.26 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.1 | 10.1 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.62 | 1.77 | | 1.11 | 1.10 | | | 0.69 | | | 0.73 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.6 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.8 | 18.8 | | 12.9 | 11.5 | | | 9.4 | | | 10.3 | |
| Level of Service | B | B | | B | B | | | A | | | B | |
| Approach Delay (s) | | 18.5 | | | 11.7 | | | 9.4 | | | 10.3 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 294 | 92 | 88 | 280 | 88 | 116 | 79 | 45 | 45 | 79 | 115 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3087 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.79 | | | 0.68 | | | 0.91 | |
| Satd. Flow (perm) | | 1347 | 1436 | | 2471 | | | 1319 | | | 1679 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 327 | 102 | 98 | 311 | 98 | 129 | 88 | 50 | 50 | 88 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 423 | 53 | 0 | 475 | 0 | 0 | 254 | 0 | 0 | 215 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 705 | 751 | | 1293 | | | 426 | | | 542 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | 0.04 | | 0.19 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.60 | 0.07 | | 0.37 | | | 0.60 | | | 0.40 | |
| Uniform Delay, d1 | | 10.8 | 7.7 | | 9.2 | | | 18.4 | | | 17.1 | |
| Progression Factor | | 1.87 | 4.77 | | 0.52 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.7 | 0.2 | | 0.8 | | | 6.0 | | | 2.2 | |
| Delay (s) | | 23.8 | 36.8 | | 5.6 | | | 24.5 | | | 19.2 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 26.3 | | | 5.6 | | | 24.5 | | | 19.2 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 78.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 281 | 28 | 25 | 315 | 58 | 26 | 130 | 46 | 62 | 145 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3026 | | 1566 | 3019 | | | 3581 | | | 3598 | |
| Flt Permitted | 0.50 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 753 | 3026 | | 899 | 3019 | | | 3234 | | | 3071 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 312 | 31 | 28 | 350 | 64 | 29 | 144 | 51 | 69 | 161 | 70 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 332 | 0 | 28 | 391 | 0 | 0 | 194 | 0 | 0 | 259 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 348 | 1397 | | 415 | 1393 | | | 1343 | | | 1276 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.18 | 0.24 | | 0.07 | 0.28 | | | 0.14 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.6 | | 9.7 | 10.8 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.66 | 0.66 | | 0.82 | 0.65 | | | 0.95 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.2 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.7 | 7.3 | | 8.1 | 7.3 | | | 11.4 | | | 5.2 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.4 | | | 7.4 | | | 11.4 | | | 5.2 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.6 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 450 | 26 | 83 | 487 | 213 | 23 | 118 | 109 | 323 | 248 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3281 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.78 | | | 0.80 | | | 0.91 | | | 0.71 | |
| Satd. Flow (perm) | | 2557 | | | 2539 | | | 2816 | | | 2306 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 500 | 29 | 92 | 541 | 237 | 26 | 131 | 121 | 359 | 276 | 87 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 60 | 0 | 0 | 65 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 575 | 0 | 0 | 810 | 0 | 0 | 213 | 0 | 0 | 706 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 983 | | | 977 | | | 1342 | | | 603 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.32 | | | 0.05 | | | c0.31 | |
| v/c Ratio | | 0.59 | | | 0.83 | | | 0.16 | | | 1.27dl | |
| Uniform Delay, d1 | | 15.9 | | | 18.1 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.48 | | | 1.00 | | | 1.00 | | | 0.81 | |
| Incremental Delay, d2 | | 2.5 | | | 8.1 | | | 0.3 | | | 93.0 | |
| Delay (s) | | 26.1 | | | 26.2 | | | 10.4 | | | 112.4 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 26.1 | | | 26.2 | | | 10.4 | | | 112.4 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.85 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 83.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 875 | 129 | 46 | 762 | 0 | 79 | 0 | 35 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3039 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.81 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3039 | | | 2507 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 972 | 143 | 51 | 847 | 0 | 88 | 0 | 39 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1099 | 0 | 0 | 898 | 0 | 0 | 109 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1958 | | | 919 | | | 236 | | | | | |
| v/s Ratio Prot | c0.36 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.36 | | | c0.08 | | | | | |
| v/c Ratio | 0.56 | | | 0.98 | | | 0.46 | | | | | |
| Uniform Delay, d1 | 8.9 | | | 28.1 | | | 33.1 | | | | | |
| Progression Factor | 0.12 | | | 1.42 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 23.6 | | | 6.4 | | | | | |
| Delay (s) | 1.4 | | | 63.5 | | | 39.5 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.4 | | | 63.5 | | | 39.5 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 29.7 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.75 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 72.9% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 218 | 633 | 24 | 108 | 586 | 178 | 59 | 4 | 103 | 205 | 10 | 206 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1783 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.31 | 1.00 | | 0.34 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 502 | 3192 | | 593 | 3320 | 1485 | | 1591 | | 773 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 242 | 703 | 27 | 120 | 651 | 198 | 66 | 4 | 114 | 228 | 11 | 229 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 90 | 0 | 89 | 0 | 0 | 0 | 132 |
| Lane Group Flow (vph) | 242 | 728 | 0 | 120 | 651 | 108 | 0 | 95 | 0 | 228 | 11 | 97 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+ov | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.2 | 43.0 | | 48.1 | 38.9 | 48.9 | | 11.8 | | 24.8 | 24.8 | 38.1 |
| Effective Green, g (s) | 55.2 | 43.0 | | 48.1 | 38.9 | 48.9 | | 11.8 | | 24.8 | 24.8 | 38.1 |
| Actuated g/C Ratio | 0.61 | 0.48 | | 0.53 | 0.43 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.42 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 463 | 1525 | | 426 | 1435 | 807 | | 209 | | 312 | 482 | 629 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.20 | 0.01 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.24 | | | 0.12 | | 0.06 | | 0.06 | | c0.12 | | 0.04 |
| v/c Ratio | 0.52 | 0.48 | | 0.28 | 0.45 | 0.13 | | 0.45 | | 0.73 | 0.02 | 0.15 |
| Uniform Delay, d1 | 8.9 | 15.9 | | 10.6 | 18.0 | 10.1 | | 36.1 | | 28.4 | 23.8 | 16.0 |
| Progression Factor | 2.61 | 1.89 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.2 | 0.9 | | 0.5 | 1.0 | 0.1 | | 2.1 | | 8.5 | 0.0 | 0.2 |
| Delay (s) | 24.3 | 30.9 | | 11.1 | 19.1 | 10.2 | | 38.2 | | 36.9 | 23.8 | 16.2 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | 29.3 | | | 16.3 | | | 38.2 | | | 26.4 | | |
| Approach LOS | C | | | B | | | D | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.56 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | | 6.0 | | | | | |
| Intersection Capacity Utilization | | | 60.2% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps



1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 511 | 431 | 2 | 323 | 0 | 0 | 0 | 0 | 18 | 0 | 548 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 568 | 479 | 2 | 359 | 0 | 0 | 0 | 0 | 20 | 0 | 609 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | 498 | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 27 |
| cM capacity (veh/h) | 1189 | | | 994 | | | 79 | 263 | 710 | 353 | 263 | 829 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 284 | 284 | 479 | 122 | 239 | 20 | 609 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 20 | 0 | | | | | |
| Volume Right | 0 | 0 | 479 | 0 | 0 | 0 | 609 | | | | | |
| cSH | 1700 | 1700 | 1700 | 994 | 1700 | 353 | 829 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.28 | 0.00 | 0.14 | 0.06 | 0.73 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 4 | 167 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 15.8 | 20.3 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 20.2 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 52.0% | | ICU Level of Service | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 529 | 0 | 325 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 588 | 0 | 361 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 294 | 294 | 361 | | | |
| Volume Left (vph) | 294 | 294 | 361 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.1 | 6.1 | 5.6 | | | |
| Degree Utilization, x | 0.50 | 0.50 | 0.56 | | | |
| Capacity (veh/h) | 571 | 573 | 620 | | | |
| Control Delay (s) | 13.9 | 13.9 | 15.3 | | | |
| Approach Delay (s) | 13.9 | | 15.3 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.5 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 475 | 64 | 192 | 501 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 582 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 528 | 71 | 213 | 557 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 587 | 0 | 213 | 557 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 456 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.05 | 0.17 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.21 | | | | | | | | |
| v/c Ratio | | 0.44 | | 0.47 | 0.30 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 15.7 | 9.2 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.35 | 0.19 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 2.8 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.4 | | 8.3 | 2.1 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.4 | | | 3.8 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 44.4% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 95 | 481 | 0 | 0 | 629 | 124 | 64 | 90 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3130 | | | 4504 | | | | |
| Flt Permitted | 0.22 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 384 | 3320 | | | 3130 | | | 4504 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 534 | 0 | 0 | 699 | 138 | 71 | 100 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 534 | 0 | 0 | 818 | 0 | 0 | 192 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 367 | 1875 | | | 1289 | | | 1431 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.26 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.29 | 0.28 | | | 0.63 | | | 0.13 | | | | |
| Uniform Delay, d1 | 18.1 | 9.6 | | | 19.9 | | | 20.7 | | | | |
| Progression Factor | 0.42 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.8 | 0.4 | | | 2.4 | | | 0.2 | | | | |
| Delay (s) | 9.4 | 3.4 | | | 22.3 | | | 20.9 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 22.3 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.38 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 44.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 346 | 114 | 91 | 386 | 81 | 129 | 78 | 30 | 30 | 85 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2977 | | | 3007 | | | 1840 | | | 1769 | |
| Flt Permitted | | 0.66 | | | 0.69 | | | 0.72 | | | 0.95 | |
| Satd. Flow (perm) | | 1975 | | | 2105 | | | 1364 | | | 1684 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 384 | 127 | 101 | 429 | 90 | 143 | 87 | 33 | 33 | 94 | 157 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 8 | 0 | 0 | 69 | 0 |
| Lane Group Flow (vph) | 0 | 604 | 0 | 0 | 599 | 0 | 0 | 255 | 0 | 0 | 215 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 699 | | | 745 | | | 672 | | | 829 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.28 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.86 | | | 0.80 | | | 0.38 | | | 0.26 | |
| Uniform Delay, d1 | | 19.6 | | | 19.0 | | | 10.3 | | | 9.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 13.5 | | | 9.0 | | | 1.6 | | | 0.8 | |
| Delay (s) | | 33.0 | | | 27.9 | | | 11.9 | | | 10.4 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 33.0 | | | 27.9 | | | 11.9 | | | 10.4 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.6 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.58 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 80.3% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 114 | 201 | 88 | 159 | 311 | 65 | 118 | 514 | 64 | 91 | 908 | 174 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.36 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 212 | 3069 | 1333 | 573 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 120 | 212 | 93 | 167 | 327 | 68 | 124 | 541 | 67 | 96 | 956 | 183 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 43 | 0 | 0 | 116 |
| Lane Group Flow (vph) | 120 | 247 | 0 | 167 | 374 | 0 | 124 | 541 | 24 | 96 | 956 | 67 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 181 | 1119 | 486 | 310 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.05 | 0.18 | | 0.02 | c0.31 | |
| v/s Ratio Perm | 0.12 | | | c0.15 | | | 0.24 | | 0.02 | 0.11 | | 0.05 |
| v/c Ratio | 0.40 | 0.25 | | 0.49 | 0.31 | | 0.69 | 0.48 | 0.05 | 0.31 | 0.85 | 0.14 |
| Uniform Delay, d1 | 19.7 | 20.8 | | 20.7 | 21.3 | | 17.7 | 20.8 | 17.5 | 15.3 | 24.8 | 18.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.39 | 1.05 | 2.38 |
| Incremental Delay, d2 | 4.0 | 0.6 | | 4.9 | 0.7 | | 19.1 | 1.5 | 0.2 | 1.9 | 5.8 | 0.4 |
| Delay (s) | 23.7 | 21.5 | | 25.5 | 21.9 | | 36.7 | 22.3 | 17.7 | 23.2 | 31.8 | 43.4 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 22.1 | | | 23.0 | | | 24.3 | | | 32.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 69.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 49 | 295 | 30 | 33 | 389 | 24 | 31 | 97 | 39 | 36 | 132 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2002 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.92 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1778 | 1466 | | 1912 | 1480 | | 1867 | 1506 | | 1878 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 311 | 32 | 35 | 409 | 25 | 33 | 102 | 41 | 38 | 139 | 68 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 363 | 15 | 0 | 444 | 12 | 0 | 135 | 17 | 0 | 177 | 28 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 821 | 677 | | 882 | 683 | | 776 | 626 | | 780 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.23 | 0.01 | | 0.07 | 0.01 | | 0.09 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.50 | 0.02 | | 0.17 | 0.03 | | 0.23 | 0.04 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.3 | 9.5 | | 12.0 | 11.2 | | 12.3 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.54 | 0.40 | | 1.04 | 1.19 | | 1.05 | 0.97 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 2.0 | 0.0 | | 0.5 | 0.1 | | 0.6 | 0.1 |
| Delay (s) | | 13.6 | 9.6 | | 8.6 | 3.9 | | 12.9 | 13.5 | | 13.5 | 11.1 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.2 | | | 8.4 | | | 13.0 | | | 12.8 | |
| Approach LOS | | B | | | A | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 11.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.37 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 82.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 317 | 20 | 51 | 297 | 51 | 10 | 107 | 23 | 109 | 203 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3072 | | 1550 | 3031 | | 1550 | 3016 | | 1550 | 2990 | |
| Flt Permitted | 0.95 | 1.00 | | 0.53 | 1.00 | | 0.56 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3072 | | 864 | 3031 | | 912 | 3016 | | 1077 | 2990 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 352 | 22 | 57 | 330 | 57 | 11 | 119 | 26 | 121 | 226 | 69 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 21 | 0 | 0 | 15 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 83 | 367 | 0 | 57 | 366 | 0 | 11 | 130 | 0 | 121 | 255 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1512 | | 292 | 1026 | | 379 | 1253 | | 447 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.12 | | | c0.12 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.11 | | |
| v/c Ratio | 0.50 | 0.24 | | 0.20 | 0.36 | | 0.03 | 0.10 | | 0.27 | 0.21 | |
| Uniform Delay, d1 | 27.3 | 9.5 | | 15.2 | 16.2 | | 11.2 | 11.6 | | 12.5 | 12.1 | |
| Progression Factor | 0.93 | 0.55 | | 0.83 | 0.83 | | 0.87 | 0.86 | | 1.14 | 1.14 | |
| Incremental Delay, d2 | 9.8 | 0.4 | | 1.4 | 0.9 | | 0.0 | 0.0 | | 1.5 | 0.4 | |
| Delay (s) | 35.2 | 5.6 | | 14.0 | 14.4 | | 9.8 | 10.0 | | 15.7 | 14.2 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 11.0 | | | 14.3 | | | 10.0 | | | 14.6 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 39.4% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 63 | 263 | 87 | 239 | 320 | 61 | 104 | 295 | 189 | 55 | 282 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.95 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2983 | | 1550 | 3024 | | | 3133 | | | 3233 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.79 | | | 0.81 | |
| Satd. Flow (perm) | 823 | 2983 | | 1550 | 3024 | | | 2496 | | | 2628 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 292 | 97 | 266 | 356 | 68 | 116 | 328 | 210 | 61 | 313 | 56 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 24 | 0 | 0 | 87 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 70 | 339 | 0 | 266 | 400 | 0 | 0 | 567 | 0 | 0 | 412 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 253 | 918 | | 143 | 1349 | | | 960 | | | 1011 | |
| v/s Ratio Prot | c0.11 | | | c0.17 | | | 0.13 | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.23 | | | 0.16 | | |
| v/c Ratio | 0.28 | 0.37 | | 1.86 | 0.30 | | | 0.59 | | | 0.41 | |
| Uniform Delay, d1 | 17.0 | 17.6 | | 29.5 | 11.5 | | | 15.9 | | | 14.6 | |
| Progression Factor | 0.65 | 0.59 | | 1.28 | 1.17 | | | 1.23 | | | 0.70 | |
| Incremental Delay, d2 | 2.7 | 1.1 | | 399.5 | 0.3 | | | 2.4 | | | 1.2 | |
| Delay (s) | 13.7 | 11.6 | | 437.2 | 13.7 | | | 21.9 | | | 11.5 | |
| Level of Service | B | B | | F | B | | | C | | | B | |
| Approach Delay (s) | 11.9 | | | 176.9 | | | 21.9 | | | 11.5 | | |
| Approach LOS | B | | | F | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 65.8 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 67.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 73 | 627 | 73 | 54 | 108 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1532 | | | 1466 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 81 | 697 | 81 | 60 | 120 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 854 | 0 | 0 | 223 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 978 | | | 936 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.58 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.91 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.2 | | | 20.2 | | | | |
| Progression Factor | | 1.29 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.1 | | | 14.6 | | | 0.9 | | | | |
| Delay (s) | | 10.6 | | | 24.8 | | | 21.1 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 10.6 | | | 24.8 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 83.2% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

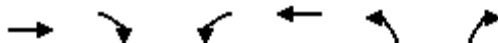


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 142 | 463 | 592 | 38 | 117 | 174 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 149 | 487 | 623 | 40 | 123 | 183 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.84 | | | | 0.84 | 0.84 |
| vC, conflicting volume | 680 | | | | 1452 | 665 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 520 | | | | 1443 | 502 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 82 | | | | 0 | 61 |
| cM capacity (veh/h) | 852 | | | | 100 | 471 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 637 | 663 | 123 | 183 | | |
| Volume Left | 149 | 0 | 123 | 0 | | |
| Volume Right | 0 | 40 | 0 | 183 | | |
| cSH | 852 | 1700 | 100 | 471 | | |
| Volume to Capacity | 0.18 | 0.39 | 1.24 | 0.39 | | |
| Queue Length 95th (ft) | 16 | 0 | 211 | 45 | | |
| Control Delay (s) | 4.3 | 0.0 | 246.0 | 17.4 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 4.3 | 0.0 | 109.3 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 87.3% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013





















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 684 | 0 | 1 | 601 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 760 | 0 | 1 | 668 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 760 | 0 | 0 | 669 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.43 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.38 | | |
| v/c Ratio | 0.63 | | | 1.05 | 0.03 | |
| Uniform Delay, d1 | 7.0 | | | 27.0 | 29.8 | |
| Progression Factor | 0.10 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | | | 49.6 | 0.2 | |
| Delay (s) | 0.9 | | | 76.6 | 30.1 | |
| Level of Service | A | | | E | C | |
| Approach Delay (s) | 0.9 | | | 76.6 | 30.1 | |
| Approach LOS | A | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 36.2 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.68 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | | |  | | | | | |   |  |
| Volume (veh/h) | 0 | 236 | 594 | 30 | 386 | 0 | 0 | 0 | 0 | 17 | 6 | 243 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 262 | 660 | 33 | 429 | 0 | 0 | 0 | 0 | 19 | 7 | 270 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 429 | | | 262 | | | 1091 | 1088 | 461 | 627 | 758 | 429 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 429 | | | 262 | | | 1091 | 1088 | 461 | 627 | 758 | 429 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 53 |
| cM capacity (veh/h) | 1141 | | | 1285 | | | 88 | 212 | 553 | 365 | 330 | 574 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 175 | 747 | 462 | 26 | 270 | | | | | | | |
| Volume Left | 0 | 0 | 33 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 660 | 0 | 0 | 270 | | | | | | | |
| cSH | 1700 | 1700 | 1285 | 355 | 574 | | | | | | | |
| Volume to Capacity | 0.10 | 0.44 | 0.03 | 0.07 | 0.47 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 62 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 15.9 | 16.7 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 16.6 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.6% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | 🚗🚗 | | 🚗 | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 253 | 0 | 417 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 281 | 0 | 463 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 141 | 141 | 463 | | | |
| Volume Left (vph) | 141 | 141 | 463 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.3 | 6.3 | 5.0 | | | |
| Degree Utilization, x | 0.25 | 0.25 | 0.64 | | | |
| Capacity (veh/h) | 543 | 544 | 702 | | | |
| Control Delay (s) | 10.1 | 10.1 | 16.3 | | | |
| Approach Delay (s) | 10.1 | | 16.3 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 38.7% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 522 | 337 | 303 | 746 | 0 | 0 | 0 | 0 | 281 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 549 | 355 | 319 | 785 | 0 | 0 | 0 | 0 | 296 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 549 | 139 | 0 | 1104 | 0 | 0 | 0 | 0 | 163 | 559 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 67.6 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 67.6 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.42 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1447 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.17 | | | c0.32 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.11 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.71 | 0.46 | | 0.76 | | | | | 0.84 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 55.3 | 51.6 | | 39.4 | | | | | 66.7 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.07 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.4 | 5.1 | | 0.2 | | | | | 25.5 | 44.1 | 0.2 |
| Delay (s) | | 60.7 | 56.7 | | 3.1 | | | | | 92.1 | 112.6 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 59.1 | | | 3.1 | | | 0.0 | | | 92.2 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.2 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.4 | | |
| Intersection Capacity Utilization | | | 79.5% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 290 | 514 | 0 | 0 | 735 | 142 | 313 | 204 | 197 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3058 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3058 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 322 | 571 | 0 | 0 | 817 | 158 | 348 | 227 | 219 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 72 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 322 | 571 | 0 | 0 | 817 | 91 | 271 | 451 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 84.4 | 84.4 | | | 36.6 | 36.6 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 84.4 | 84.4 | | | 36.6 | 36.6 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.53 | 0.53 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 847 | 1810 | | | 734 | 340 | 117 | 229 | | | | |
| v/s Ratio Prot | c0.20 | 0.17 | | | c0.25 | | c0.17 | 0.15 | | | | |
| v/s Ratio Perm | | | | | | 0.06 | | | | | | |
| v/c Ratio | 0.38 | 0.32 | | | 1.11 | 0.27 | 2.32 | 1.97 | | | | |
| Uniform Delay, d1 | 22.3 | 21.4 | | | 61.7 | 50.7 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.06 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 68.8 | 0.4 | 618.2 | 451.4 | | | | |
| Delay (s) | 1.4 | 1.3 | | | 130.5 | 51.1 | 692.2 | 525.4 | | | | |
| Level of Service | A | A | | | F | D | F | F | | | | |
| Approach Delay (s) | | 1.4 | | | 117.6 | | | 582.3 | | | 0.0 | |
| Approach LOS | | A | | | F | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 217.2 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.77 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 68.2% | | | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 138 | 308 | 134 | 186 | 414 | 106 | 104 | 504 | 93 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1579 | 1600 | 1372 | 1594 | 1789 | | 1578 | 2999 | | 1537 | 3001 | |
| Flt Permitted | 0.15 | 1.00 | 1.00 | 0.36 | 1.00 | | 0.14 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | 255 | 1600 | 1372 | 610 | 1789 | | 229 | 2999 | | 501 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 145 | 324 | 141 | 196 | 436 | 112 | 109 | 531 | 98 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 98 | 0 | 10 | 0 | 0 | 17 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 145 | 324 | 43 | 196 | 538 | 0 | 109 | 612 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.1 | 27.1 | 27.1 | 34.1 | 27.1 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 32.1 | 28.1 | 27.1 | 32.1 | 27.1 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.36 | 0.32 | 0.31 | 0.36 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 182 | 507 | 419 | 287 | 547 | | 166 | 1153 | | 265 | 1154 | |
| v/s Ratio Prot | c0.05 | 0.20 | | 0.05 | c0.30 | | c0.03 | 0.20 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.23 | | 0.03 | 0.20 | | | 0.25 | | | 0.16 | | |
| v/c Ratio | 0.80 | 0.64 | 0.10 | 0.68 | 0.98 | | 0.66 | 0.53 | | 0.42 | 0.83 | |
| Uniform Delay, d1 | 22.9 | 26.0 | 22.1 | 23.2 | 30.6 | | 18.1 | 21.1 | | 16.3 | 24.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 21.0 | 6.1 | 0.5 | 6.6 | 34.5 | | 9.0 | 1.8 | | 1.1 | 7.0 | |
| Delay (s) | 43.9 | 32.0 | 22.6 | 29.7 | 65.0 | | 27.1 | 22.9 | | 17.4 | 31.7 | |
| Level of Service | D | C | C | C | E | | C | C | | B | C | |
| Approach Delay (s) | | 32.7 | | | 55.7 | | | 23.5 | | | 30.2 | |
| Approach LOS | | C | | | E | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.1 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 88.7 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 86.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 38 | 394 | 59 | 112 | 635 | 61 | 36 | 57 | 44 | 30 | 88 | 67 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1971 | 1467 | | 1624 | 1381 | | 1853 | | | 1874 | |
| Flt Permitted | | 0.65 | 1.00 | | 0.79 | 1.00 | | 0.91 | | | 0.95 | |
| Satd. Flow (perm) | | 1291 | 1467 | | 1289 | 1381 | | 1702 | | | 1794 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 415 | 62 | 118 | 668 | 64 | 38 | 60 | 46 | 32 | 93 | 71 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 18 | 0 | 26 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 455 | 32 | 0 | 786 | 46 | 0 | 118 | 0 | 0 | 164 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 636 | 722 | | 635 | 680 | | 707 | | | 745 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.35 | 0.02 | | c0.61 | 0.03 | | 0.07 | | | c0.09 | |
| v/c Ratio | | 0.72 | 0.04 | | 1.24 | 0.07 | | 0.17 | | | 0.22 | |
| Uniform Delay, d1 | | 12.9 | 8.6 | | 16.5 | 8.7 | | 11.9 | | | 12.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.89 | 2.78 | | 1.00 | | | 1.96 | |
| Incremental Delay, d2 | | 6.8 | 0.1 | | 108.3 | 0.0 | | 0.5 | | | 0.7 | |
| Delay (s) | | 19.7 | 8.7 | | 139.5 | 24.1 | | 12.4 | | | 24.6 | |
| Level of Service | | B | A | | F | C | | B | | | C | |
| Approach Delay (s) | | 18.4 | | | 130.8 | | | 12.4 | | | 24.6 | |
| Approach LOS | | B | | | F | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 74.6 | | | HCM Level of Service | | | E | | | | |
| HCM Volume to Capacity ratio | | 0.77 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 89.3% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 58 | 313 | 40 | 110 | 692 | 20 | 34 | 108 | 43 | 16 | 175 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1756 | 1443 | | 1724 | 1487 | | 1713 | 1489 | | 1713 | |
| Flt Permitted | | 0.18 | 1.00 | | 0.66 | 1.00 | | 0.89 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 325 | 1443 | | 1143 | 1487 | | 1551 | 1489 | | 1687 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 61 | 329 | 42 | 116 | 728 | 21 | 36 | 114 | 45 | 17 | 184 | 69 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 6 | 0 | 0 | 23 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 390 | 18 | 0 | 844 | 15 | 0 | 150 | 22 | 0 | 251 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 115 | 511 | | 404 | 526 | | 764 | 733 | | 831 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c1.20 | 0.01 | | 0.74 | 0.01 | | 0.10 | 0.01 | | c0.15 | |
| v/c Ratio | | 3.39 | 0.04 | | 2.09 | 0.03 | | 0.20 | 0.03 | | 0.30 | |
| Uniform Delay, d1 | | 21.0 | 13.7 | | 21.0 | 13.7 | | 9.3 | 8.5 | | 9.8 | |
| Progression Factor | | 1.65 | 2.43 | | 0.98 | 0.85 | | 0.16 | 0.22 | | 1.09 | |
| Incremental Delay, d2 | | 1092.9 | 0.1 | | 494.2 | 0.0 | | 0.1 | 0.0 | | 0.9 | |
| Delay (s) | | 1127.5 | 33.4 | | 514.8 | 11.7 | | 1.5 | 1.9 | | 11.6 | |
| Level of Service | | F | C | | F | B | | A | A | | B | |
| Approach Delay (s) | | 1021.1 | | | 502.6 | | | 1.6 | | | 11.6 | |
| Approach LOS | | F | | | F | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 499.0 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 99.8% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

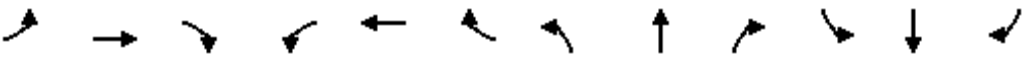
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 298 | 35 | 76 | 8 | 14 | 11 | 38 | 246 | 8 | 30 | 547 | 789 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1855 | 1440 | | 1767 | | | 1995 | | | 1975 | 1382 |
| Flt Permitted | | 0.75 | 1.00 | | 0.92 | | | 0.82 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1455 | 1440 | | 1640 | | | 1653 | | | 1930 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 331 | 39 | 84 | 9 | 16 | 12 | 42 | 273 | 9 | 33 | 608 | 877 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 303 |
| Lane Group Flow (vph) | 0 | 370 | 35 | 0 | 28 | 0 | 0 | 322 | 0 | 0 | 641 | 574 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 654 | 598 | | 429 | | | 814 | | | 950 | 680 |
| v/s Ratio Prot | | c0.07 | | | | | | | | | | |
| v/s Ratio Perm | | 0.17 | 0.02 | | 0.02 | | | 0.20 | | | 0.33 | c0.42 |
| v/c Ratio | | 0.57 | 0.06 | | 0.07 | | | 0.40 | | | 0.67 | 0.84 |
| Uniform Delay, d1 | | 14.5 | 11.4 | | 18.0 | | | 10.4 | | | 12.5 | 14.3 |
| Progression Factor | | 1.18 | 1.96 | | 1.00 | | | 0.41 | | | 0.76 | 1.13 |
| Incremental Delay, d2 | | 0.3 | 0.0 | | 0.3 | | | 0.6 | | | 3.5 | 11.3 |
| Delay (s) | | 17.4 | 22.3 | | 18.3 | | | 4.9 | | | 13.0 | 27.5 |
| Level of Service | | B | C | | B | | | A | | | B | C |
| Approach Delay (s) | | 18.3 | | | 18.3 | | | 4.9 | | | 21.4 | |
| Approach LOS | | B | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.4 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 94.7% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















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| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 923 | 289 | 438 | 1163 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4577 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.09 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4577 | | 155 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 972 | 304 | 461 | 1224 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 62 |
| Lane Group Flow (vph) | 0 | 1229 | 0 | 461 | 1224 | 0 | 0 | 0 | 0 | 308 | 603 | 209 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 39.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 39.5 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.34 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1572 | | 495 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.27 | | 0.25 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | 0.36 | | | | | | 0.21 | 0.21 | 0.14 |
| v/c Ratio | | 0.78 | | 0.93 | 0.57 | | | | | 0.85 | 0.85 | 0.59 |
| Uniform Delay, d1 | | 33.9 | | 32.7 | 11.1 | | | | | 41.4 | 41.4 | 38.4 |
| Progression Factor | | 1.00 | | 0.78 | 2.03 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 3.9 | | 14.8 | 0.5 | | | | | 16.7 | 9.4 | 2.8 |
| Delay (s) | | 37.8 | | 40.3 | 23.0 | | | | | 58.1 | 50.8 | 41.2 |
| Level of Service | | D | | D | C | | | | | E | D | D |
| Approach Delay (s) | | 37.8 | | | 27.7 | | | 0.0 | | | 50.5 | |
| Approach LOS | | D | | | C | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 110.2% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave























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| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1095 | 0 | 0 | 1194 | 269 | 406 | 333 | 321 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Flt Permitted | 0.09 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 289 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1153 | 0 | 0 | 1257 | 283 | 427 | 351 | 338 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 67 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1153 | 0 | 0 | 1257 | 201 | 0 | 1049 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 73.2 | 73.2 | | | 53.2 | 53.2 | | 29.8 | | | | |
| Effective Green, g (s) | 73.2 | 73.2 | | | 53.2 | 53.2 | | 29.8 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.46 | 0.46 | | 0.26 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 532 | 2134 | | | 1499 | 689 | | 1169 | | | | |
| v/s Ratio Prot | c0.08 | 0.34 | | | c0.39 | | | | | | | |
| v/s Ratio Perm | 0.35 | | | | | 0.13 | | 0.23 | | | | |
| v/c Ratio | 0.67 | 0.54 | | | 0.84 | 0.29 | | 0.90 | | | | |
| Uniform Delay, d1 | 23.8 | 11.6 | | | 27.1 | 19.2 | | 41.1 | | | | |
| Progression Factor | 1.51 | 0.14 | | | 0.87 | 1.15 | | 1.00 | | | | |
| Incremental Delay, d2 | 2.0 | 0.6 | | | 3.2 | 0.6 | | 9.8 | | | | |
| Delay (s) | 38.0 | 2.1 | | | 26.9 | 22.6 | | 50.9 | | | | |
| Level of Service | D | A | | | C | C | | D | | | | |
| Approach Delay (s) | | 10.7 | | | 26.1 | | | 50.9 | | | 0.0 | |
| Approach LOS | | B | | | C | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 110.2% | | ICU Level of Service | | | H | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















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| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 132 | 705 | 399 | 102 | 954 | 75 | 227 | 179 | 66 | 80 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1601 | 3286 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.37 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 623 | 3286 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 139 | 742 | 420 | 107 | 1004 | 79 | 239 | 188 | 69 | 84 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 169 | 0 | 5 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 139 | 742 | 251 | 107 | 1078 | 0 | 239 | 219 | 0 | 84 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | | pm+pt | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.4 | 68.8 | 43.4 | 34.4 | | 38.1 | 26.5 | | 26.3 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.4 | 68.8 | 43.4 | 34.4 | | 38.1 | 26.5 | | 26.3 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.46 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 425 | 1491 | 786 | 312 | 983 | | 348 | 692 | | 261 | 465 | |
| v/s Ratio Prot | c0.08 | c0.23 | 0.05 | 0.03 | c0.33 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.50 | 0.32 | 0.34 | 1.10 | | 0.69 | 0.32 | | 0.32 | 0.41 | |
| Uniform Delay, d1 | 17.4 | 22.0 | 11.5 | 23.9 | 40.3 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.77 | 0.74 | 1.65 | 1.00 | 1.00 | | 1.02 | 1.04 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.9 | 0.2 | 0.7 | 58.9 | | 5.3 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 15.1 | 17.3 | 19.1 | 24.5 | 99.2 | | 36.5 | 39.2 | | 36.9 | 45.7 | |
| Level of Service | B | B | B | C | F | | D | D | | D | D | |
| Approach Delay (s) | | 17.7 | | | 92.5 | | | 37.9 | | | 43.7 | |
| Approach LOS | | B | | | F | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 19.0 | | |
| Intersection Capacity Utilization | | | 80.8% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 250 | 367 | 91 | 430 | 107 | 362 | 340 | 84 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 2926 | | 1653 | 3269 | | 1620 | 3402 | | 1580 | 3183 | |
| Flt Permitted | 0.36 | 1.00 | | 0.22 | 1.00 | | 0.32 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 639 | 2926 | | 379 | 3269 | | 544 | 3402 | | 822 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 96 | 453 | 113 | 381 | 358 | 88 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 215 | 0 | 0 | 18 | 0 | 0 | 19 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 434 | 0 | 96 | 548 | 0 | 381 | 427 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 39.4 | 32.7 | | 46.2 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 39.4 | 32.7 | | 46.2 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.34 | 0.28 | | 0.40 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 281 | 832 | | 264 | 1026 | | 454 | 1308 | | 339 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.03 | c0.17 | | c0.15 | 0.13 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.05 | | | 0.11 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.17 | 0.52 | | 0.36 | 0.53 | | 0.84 | 0.33 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 25.7 | 34.6 | | 23.2 | 32.5 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Incremental Delay, d2 | 0.3 | 2.3 | | 1.0 | 2.0 | | 13.1 | 0.7 | | 4.0 | 2.2 | |
| Delay (s) | 26.1 | 36.9 | | 24.3 | 34.5 | | 33.9 | 25.6 | | 32.7 | 36.1 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 36.2 | | | 33.0 | | | 29.4 | | | 35.1 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 77.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 101 | 670 | 135 | 10 | 741 | 89 | 102 | 281 | 9 | 194 | 578 | 174 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3040 | | | 3060 | | 1452 | 3227 | | 1522 | 2872 | |
| Flt Permitted | | 0.53 | | | 0.94 | | 0.21 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | | 1620 | | | 2874 | | 317 | 3227 | | 883 | 2872 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 112 | 744 | 150 | 11 | 823 | 99 | 113 | 312 | 10 | 216 | 642 | 193 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 14 | 0 | 0 | 4 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 984 | 0 | 0 | 919 | 0 | 113 | 318 | 0 | 216 | 791 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 710 | | | 752 | | 206 | 1192 | | 420 | 1060 | |
| v/s Ratio Prot | | c0.09 | | | | | c0.03 | 0.10 | | 0.03 | c0.28 | |
| v/s Ratio Perm | | c0.45 | | | 0.32 | | 0.20 | | | 0.19 | | |
| v/c Ratio | | 1.39 | | | 1.22 | | 0.55 | 0.27 | | 0.51 | 0.75 | |
| Uniform Delay, d1 | | 20.0 | | | 24.0 | | 12.3 | 14.3 | | 12.5 | 17.9 | |
| Progression Factor | | 1.00 | | | 1.42 | | 1.03 | 0.57 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 182.2 | | | 101.1 | | 9.6 | 0.5 | | 4.4 | 4.8 | |
| Delay (s) | | 202.2 | | | 135.3 | | 22.2 | 8.7 | | 17.0 | 22.7 | |
| Level of Service | | F | | | F | | C | A | | B | C | |
| Approach Delay (s) | | 202.2 | | | 135.3 | | | 12.2 | | | 21.5 | |
| Approach LOS | | F | | | F | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 104.4 | | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | 1.01 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | 94.4% | | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 261 | 136 | 126 | 410 | 27 | 70 | 450 | 84 | 33 | 662 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1910 | | 1601 | 2019 | | 1676 | 3214 | | 1435 | 3274 | |
| Flt Permitted | 0.32 | 1.00 | | 0.37 | 1.00 | | 0.31 | 1.00 | | 0.42 | 1.00 | |
| Satd. Flow (perm) | 576 | 1910 | | 621 | 2019 | | 552 | 3214 | | 640 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 269 | 140 | 130 | 423 | 28 | 72 | 464 | 87 | 34 | 682 | 68 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 4 | 0 | 0 | 24 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 69 | 380 | 0 | 130 | 447 | 0 | 72 | 527 | 0 | 34 | 738 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 213 | 705 | | 229 | 745 | | 263 | 1533 | | 305 | 1561 | |
| v/s Ratio Prot | | 0.20 | | | c0.22 | | | 0.16 | | | c0.23 | |
| v/s Ratio Perm | 0.12 | | | 0.21 | | | 0.13 | | | 0.05 | | |
| v/c Ratio | 0.32 | 0.54 | | 0.57 | 0.60 | | 0.27 | 0.34 | | 0.11 | 0.47 | |
| Uniform Delay, d1 | 14.7 | 16.1 | | 16.4 | 16.6 | | 10.2 | 10.6 | | 9.4 | 11.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.34 | 1.36 | | 1.00 | 1.00 | | 1.14 | 0.92 | |
| Incremental Delay, d2 | 4.0 | 2.9 | | 0.9 | 0.3 | | 2.6 | 0.6 | | 0.3 | 0.5 | |
| Delay (s) | 18.7 | 19.1 | | 22.9 | 22.9 | | 12.8 | 11.3 | | 11.1 | 11.0 | |
| Level of Service | B | B | | C | C | | B | B | | B | B | |
| Approach Delay (s) | | 19.0 | | | 22.9 | | | 11.4 | | | 11.0 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 15.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.53 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 73.6% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 848 | 495 | 922 | 41 | 3 | 10 | 9 | 46 | 15 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3077 | | | | 1812 | | | 1858 | |
| Flt Permitted | | 0.81 | | 0.58 | | | | 0.96 | | | 0.85 | |
| Satd. Flow (perm) | | 2546 | | 1799 | | | | 1749 | | | 1633 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 893 | 521 | 971 | 43 | 3 | 11 | 9 | 48 | 16 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 895 | 0 | 1532 | 0 | 0 | 0 | 33 | 0 | 0 | 20 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 705 | | 865 | | | | 377 | | | 352 | |
| v/s Ratio Prot | | | | c0.16 | | | | | | | | |
| v/s Ratio Perm | | 0.35 | | c0.57 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 1.27 | | 2.48dl | | | | 0.09 | | | 0.06 | |
| Uniform Delay, d1 | | 23.5 | | 19.0 | | | | 20.4 | | | 20.3 | |
| Progression Factor | | 1.42 | | 0.61 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 122.3 | | 350.1 | | | | 0.5 | | | 0.3 | |
| Delay (s) | | 155.7 | | 361.7 | | | | 20.9 | | | 20.6 | |
| Level of Service | | F | | F | | | | C | | | C | |
| Approach Delay (s) | | 155.7 | | 361.7 | | | | 20.9 | | | 20.6 | |
| Approach LOS | | F | | F | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 268.7 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.22 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 118.0% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

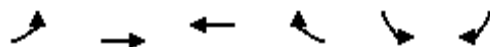


| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 311 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 327 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 330 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.21 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.38 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.83 | |
| Incremental Delay, d2 | | 190.6 | |
| Delay (s) | | 213.5 | |
| Level of Service | | F | |
| Approach Delay (s) | | 213.5 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 256 | 942 | 1242 | 176 | 120 | 222 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3285 | 3258 | | 1660 | 1485 |
| Flt Permitted | | 0.51 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1706 | 3258 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 284 | 1047 | 1380 | 196 | 133 | 247 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 1331 | 1559 | 0 | 133 | 207 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1050 | 2005 | | 434 | 388 |
| v/s Ratio Prot | | | 0.48 | | 0.08 | |
| v/s Ratio Perm | | c0.78 | | | | c0.14 |
| v/c Ratio | | 2.63dl | 0.78 | | 0.31 | 0.53 |
| Uniform Delay, d1 | | 12.5 | 9.2 | | 19.3 | 20.6 |
| Progression Factor | | 1.27 | 0.61 | | 1.03 | 1.01 |
| Incremental Delay, d2 | | 121.2 | 1.4 | | 1.0 | 3.0 |
| Delay (s) | | 137.0 | 7.0 | | 21.0 | 23.7 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 137.0 | 7.0 | | 22.8 | |
| Approach LOS | | F | A | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|-----|
| HCM Average Control Delay | 61.5 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.05 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 94.5% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 79 | 986 | 1334 | 194 | 270 | 86 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3120 | 3139 | | 1506 | 1343 |
| Flt Permitted | | 0.61 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1899 | 3139 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 83 | 1038 | 1404 | 204 | 284 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 18 |
| Lane Group Flow (vph) | 0 | 1121 | 1590 | 0 | 284 | 73 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 993 | 1642 | | 533 | 475 |
| v/s Ratio Prot | | | 0.51 | | 0.19 | |
| v/s Ratio Perm | | 0.59 | | | | 0.05 |
| v/c Ratio | | 1.13 | 0.97 | | 0.53 | 0.15 |
| Uniform Delay, d1 | | 15.5 | 15.0 | | 16.7 | 14.3 |
| Progression Factor | | 1.10 | 1.48 | | 1.75 | 2.06 |
| Incremental Delay, d2 | | 59.4 | 2.6 | | 3.0 | 0.5 |
| Delay (s) | | 76.5 | 24.7 | | 32.3 | 30.1 |
| Level of Service | | E | C | | C | C |
| Approach Delay (s) | | 76.5 | 24.7 | | 31.8 | |
| Approach LOS | | E | C | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 44.3 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.89 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 102.5% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave

























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 862 | 251 | 528 | 1414 | 195 | 158 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.94 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2405 | | 1788 | 2506 | 1733 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2405 | | 243 | 2506 | 1733 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 880 | 256 | 539 | 1443 | 199 | 161 |
| RTOR Reduction (vph) | 16 | 0 | 0 | 0 | 45 | 0 |
| Lane Group Flow (vph) | 1120 | 0 | 539 | 1443 | 315 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1147 | | 116 | 1195 | 640 | |
| v/s Ratio Prot | 0.47 | | | 0.58 | c0.18 | |
| v/s Ratio Perm | | | c2.22 | | | |
| v/c Ratio | 0.98 | | 4.65 | 1.21 | 0.49 | |
| Uniform Delay, d1 | 16.6 | | 17.0 | 17.0 | 15.8 | |
| Progression Factor | 1.46 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.2 | | 1660.5 | 101.5 | 2.7 | |
| Delay (s) | 28.5 | | 1677.5 | 118.5 | 18.5 | |
| Level of Service | C | | F | F | B | |
| Approach Delay (s) | 28.5 | | | 542.4 | 18.5 | |
| Approach LOS | C | | | F | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 320.3 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 2.84 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 115.1% | | ICU Level of Service | H |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   |  |  |   |  | |  |  | |   | |
| Volume (vph) | 1 | 1984 | 37 | 108 | 935 | 1 | 59 | 0 | 149 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.28 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 546 | 3431 | 1479 | 127 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 2204 | 41 | 120 | 1039 | 1 | 66 | 0 | 166 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 138 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 2204 | 31 | 120 | 1039 | 1 | 0 | 66 | 28 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 49.7 | 49.7 | 49.7 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Effective Green, g (s) | 49.7 | 49.7 | 49.7 | 67.9 | 67.9 | 67.9 | | 9.1 | 9.1 | | | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 319 | 2006 | 865 | 363 | 2652 | 1222 | | 165 | 161 | | | |
| v/s Ratio Prot | | c0.64 | | 0.06 | c0.31 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.21 | | 0.00 | | c0.04 | 0.02 | | | |
| v/c Ratio | 0.00 | 1.10 | 0.04 | 0.33 | 0.39 | 0.00 | | 0.40 | 0.17 | | | |
| Uniform Delay, d1 | 7.3 | 17.6 | 7.5 | 16.9 | 2.5 | 1.7 | | 35.4 | 34.5 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 52.8 | 0.1 | 0.5 | 0.1 | 0.0 | | 1.6 | 0.5 | | | |
| Delay (s) | 7.4 | 70.5 | 7.6 | 17.4 | 2.6 | 1.7 | | 37.0 | 35.0 | | | |
| Level of Service | A | E | A | B | A | A | | D | D | | | |
| Approach Delay (s) | | 69.3 | | | 4.1 | | | 35.6 | | | 0.0 | |
| Approach LOS | | E | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 46.4 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 79.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




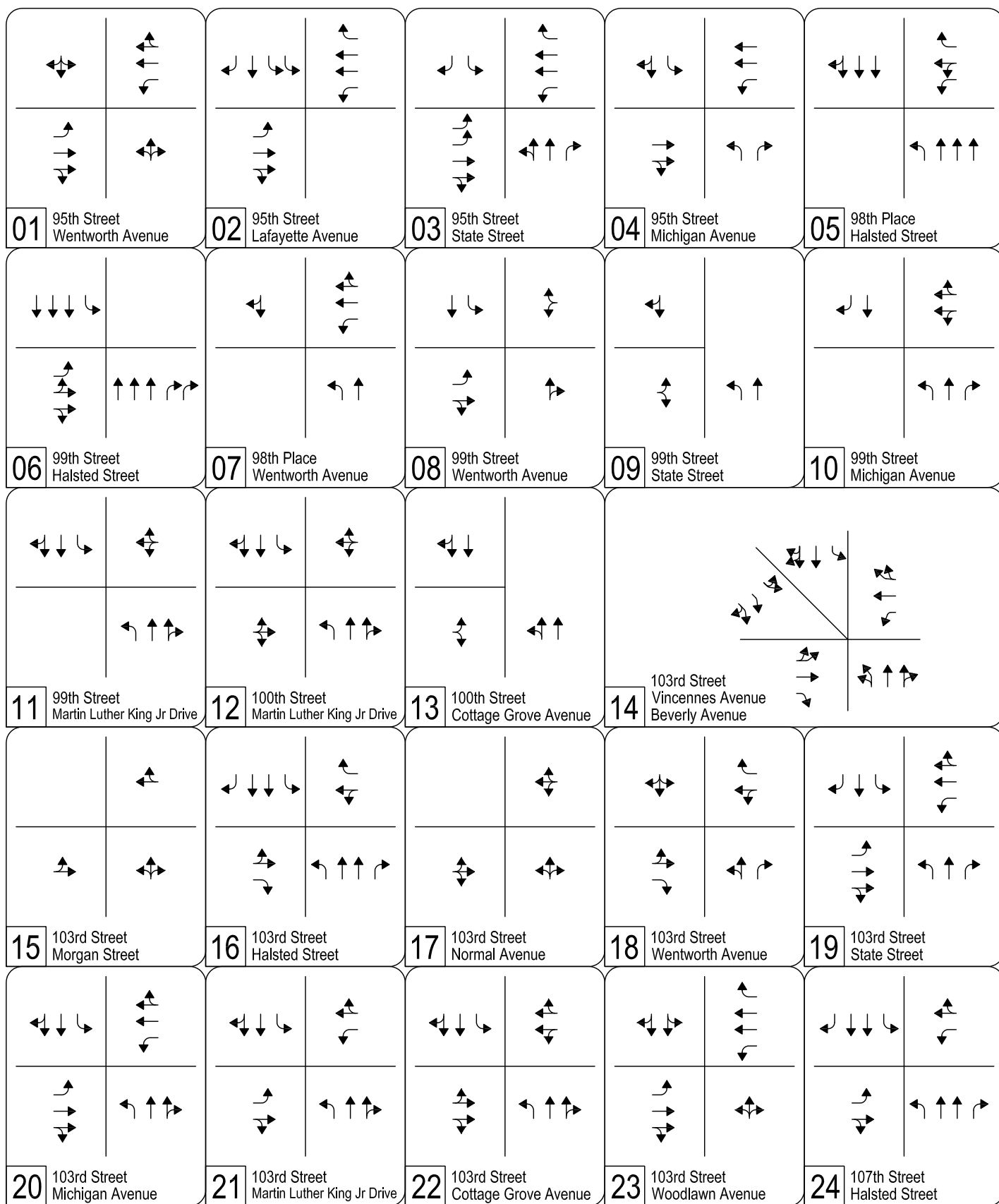
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 932 | 813 | 29 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2913 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1036 | 903 | 32 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1048 | 932 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.30 | | c0.06 | |
| v/s Ratio Perm | | c0.36 | | | | |
| v/c Ratio | | 0.98 | 0.43 | | 0.73 | |
| Uniform Delay, d1 | | 28.2 | 5.4 | | 40.6 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 23.4 | 0.2 | | 32.1 | |
| Delay (s) | | 51.6 | 0.3 | | 72.7 | |
| Level of Service | | D | A | | E | |
| Approach Delay (s) | | 51.6 | 0.3 | | 72.7 | |
| Approach LOS | | D | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 29.5 | HCM Level of Service | | C |
| HCM Volume to Capacity ratio | | | 0.75 | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | 25.0 |
| Intersection Capacity Utilization | | | 47.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

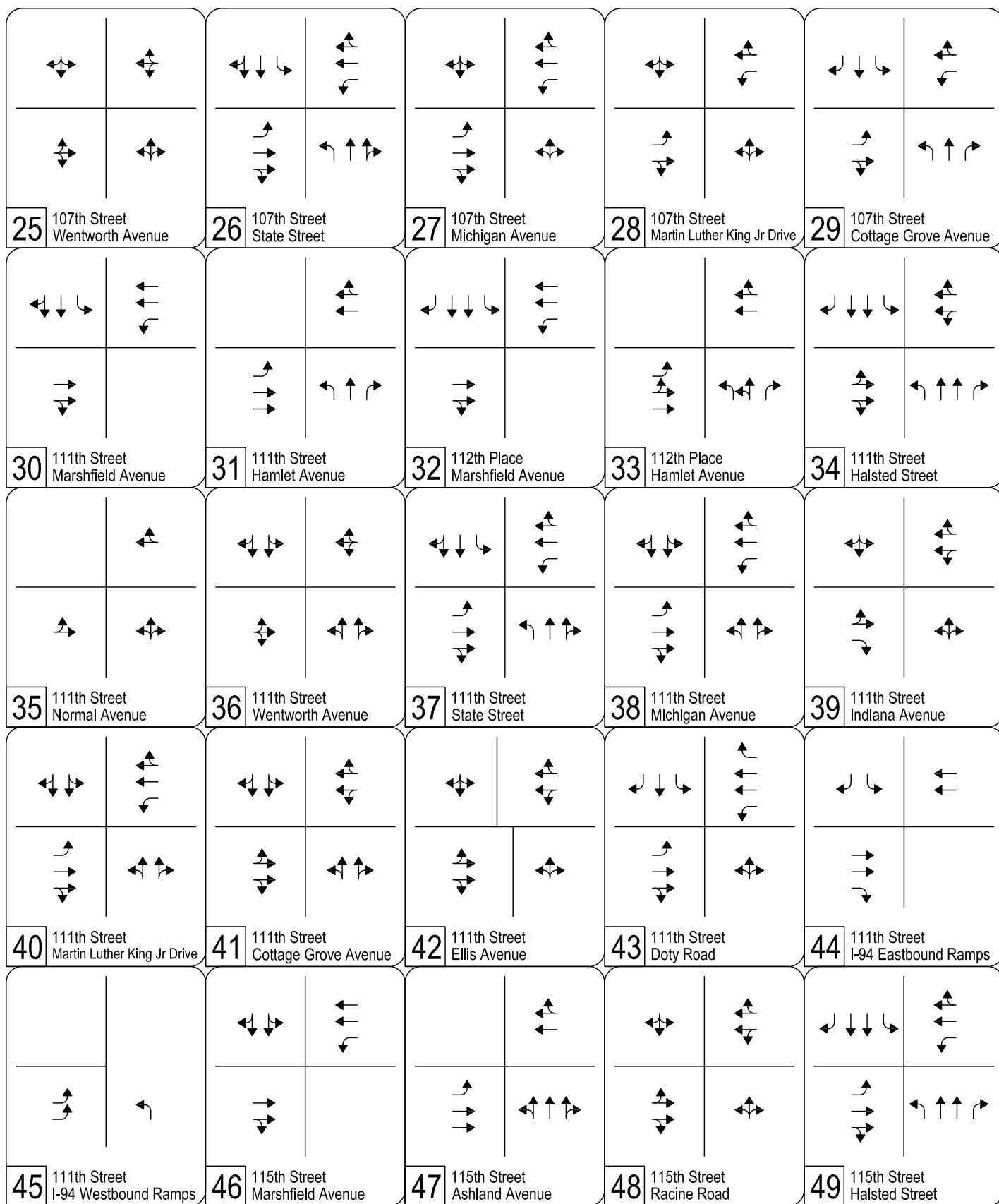
1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 107 | 496 | 0 | 1 | 565 | 38 | 3 | 2 | 28 | 192 | 0 | 143 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1763 | | | 3340 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.77 | | | 0.95 | | | 0.93 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1373 | | | 3190 | | | 1370 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 551 | 0 | 1 | 628 | 42 | 3 | 2 | 31 | 213 | 0 | 159 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 107 |
| Lane Group Flow (vph) | 0 | 670 | 0 | 0 | 665 | 0 | 0 | 8 | 0 | 0 | 213 | 52 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 501 | | | 1714 | | | 145 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.49 | | | 0.14 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.34 | | | 0.39 | | | 0.06 | | | 0.45 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 11.8 | | | 34.2 | | | 24.4 | 19.9 |
| Progression Factor | | 1.00 | | | 1.28 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 164.9 | | | 0.1 | | | 0.8 | | | 3.0 | 0.5 |
| Delay (s) | | 191.9 | | | 15.3 | | | 34.9 | | | 27.4 | 20.4 |
| Level of Service | | F | | | B | | | C | | | C | C |
| Approach Delay (s) | | 191.9 | | | 15.3 | | | 34.9 | | | 24.4 | |
| Approach LOS | | F | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 85.3 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 79.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



UPRR ROW Option Alternative (2030) Intersection Lane Geometry

Page 1 of 3



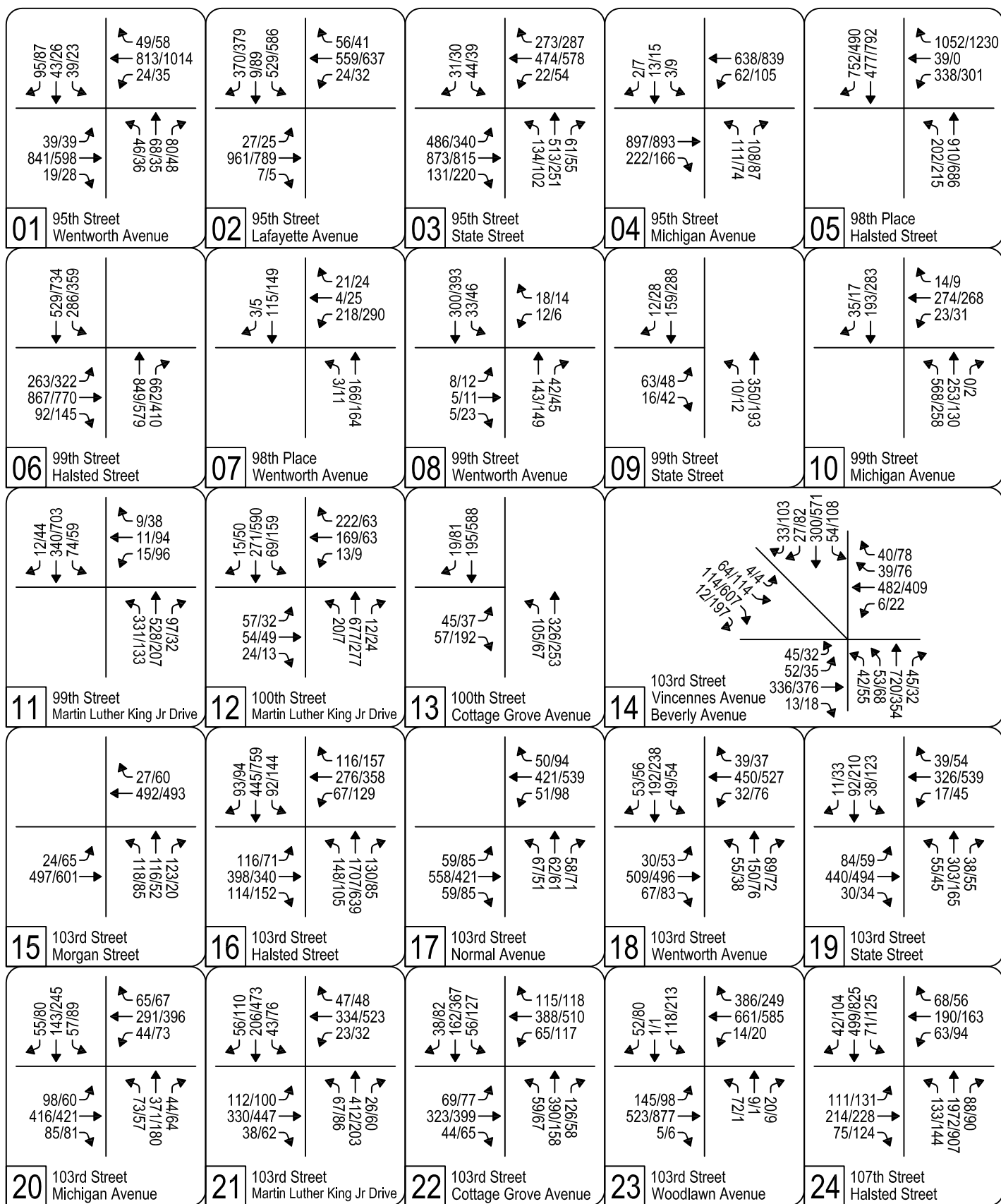
UPRR ROW Option Alternative (2030) Intersection Lane Geometry

Page 2 of 3

| | | | | | | | | | |
|--|---|--|--|--|--|--|---|--|---|
| | 50 111th Street Wentworth Avenue | | 51 115th Street State Street | | 52 115th Street Michigan Avenue | | 53 115th Street Indiana Avenue | | 54 115th Street Martin Luther King Jr Drive |
| | 55 115th Street Cottage Grove Avenue | | 56 115th Street I-94 Eastbound Ramps | | 57 115th Street I-94 Westbound Ramps | | 58 119th Street Marshfield Avenue | | 59 119th Street Ashland Avenue |
| | 60 119th Street Halsted Street | | 61 119th Street Wentworth Avenue | | 62 119th Street State Street | | 63 119th Street Michigan Avenue | | 64 127th Street Paulina Street |
| | 65 127th Street Marshfield Avenue | | 66 127th Street Ashland Avenue | | 67 Vermont Street Ashland Avenue | | 68 127th Street Halsted Street | | 69 Vermont Street Halsted Street |
| | 70 127th Street/Vermont Street/Wallace Street | | 71 127th Street State Street | | 72 127th Street Michigan Avenue | | 73 130th Street Indiana Avenue | | 74 130th Street Ellis Avenue |

UPRR ROW Option Alternative (2030) Intersection Lane Geometry

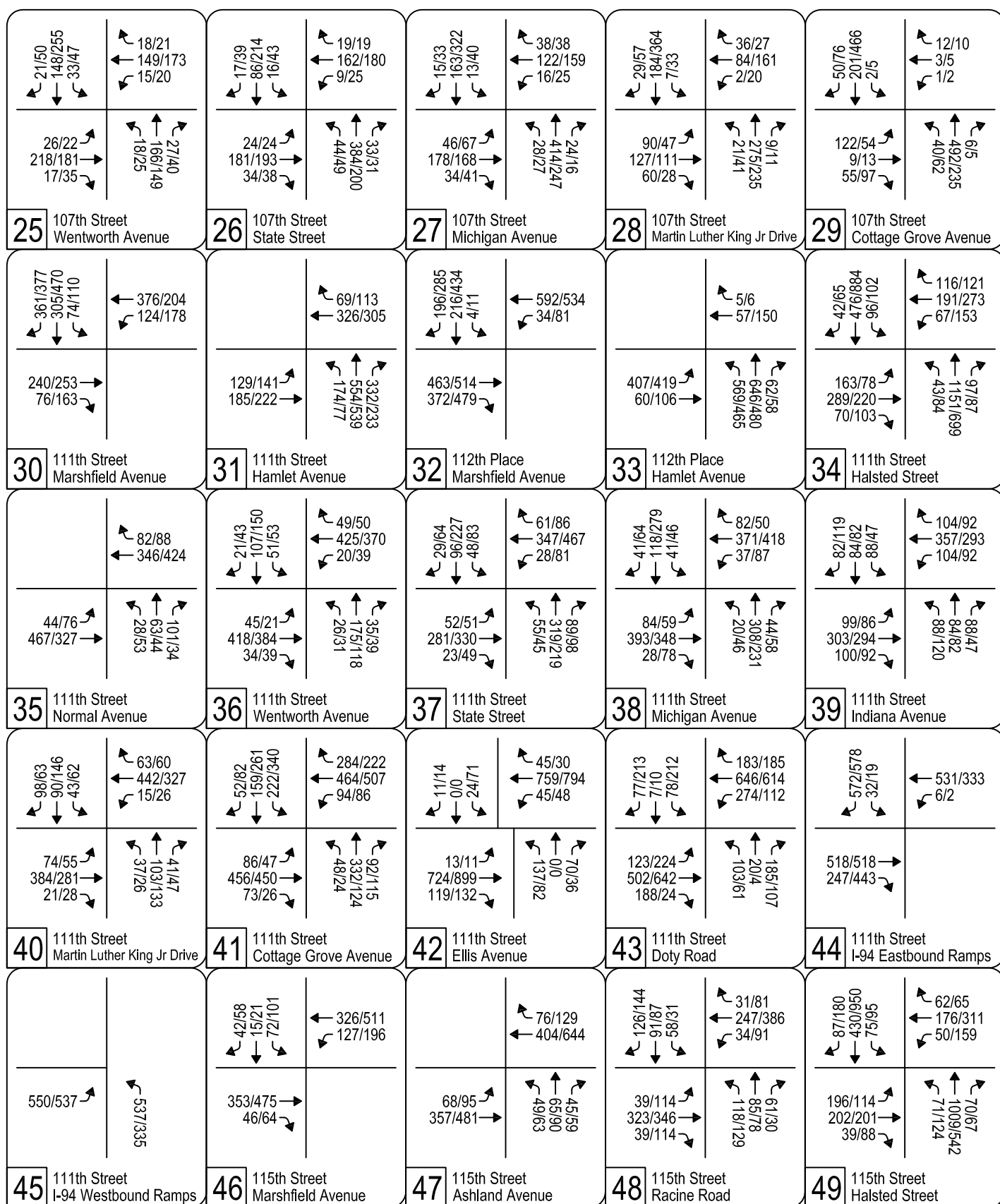
Page 3 of 3



UPRR ROW Option Alternative (2030) Intersection Traffic Volumes

Page 1 of 3

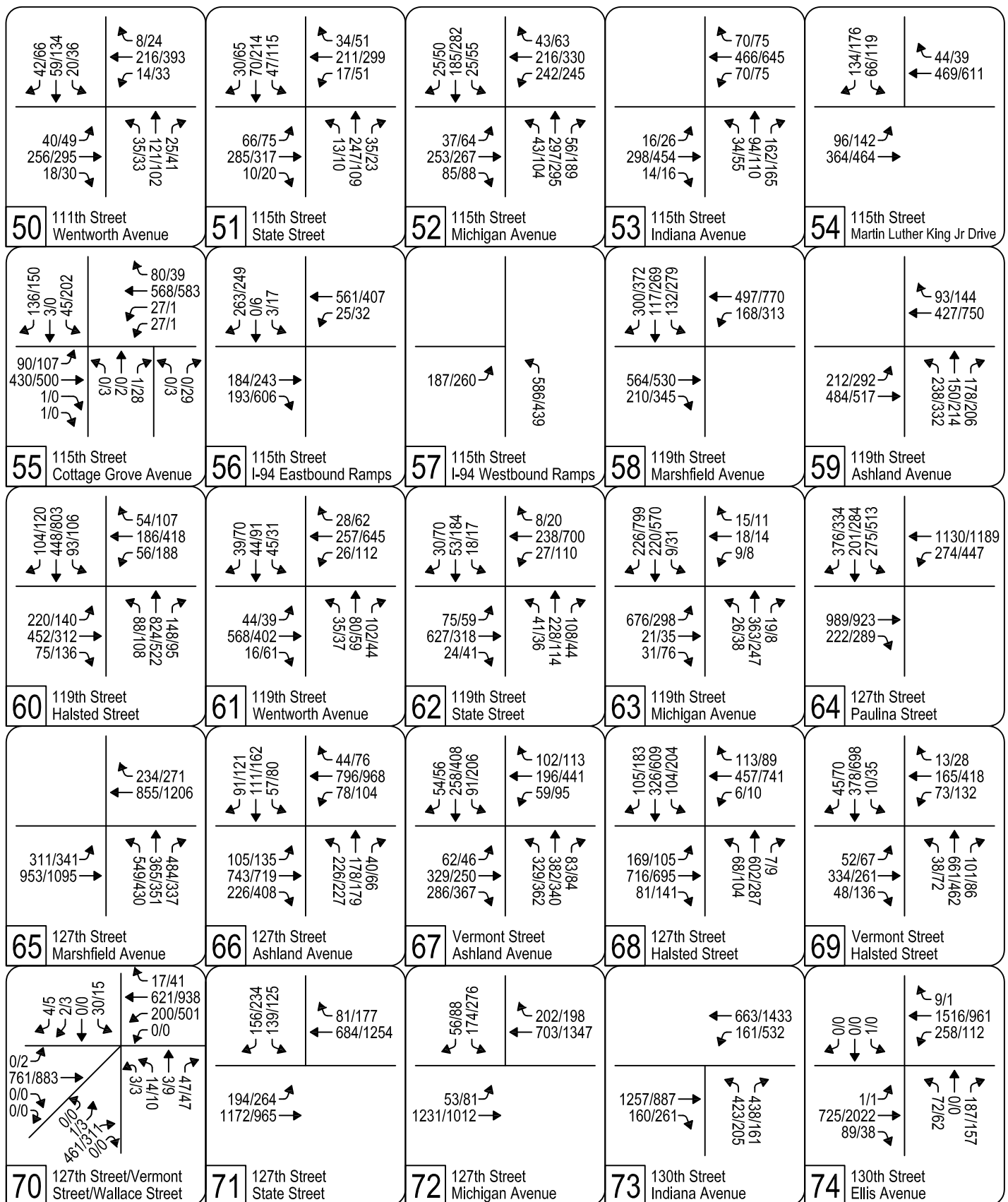
Legend: AM/PM Peak Hour Volumes



UPRR ROW Option Alternative (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



UPRR ROW Option Alternative (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 68 | 80 | 39 | 43 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1755 | | | 1673 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1531 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 72 | 84 | 41 | 45 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 165 | 0 | 0 | 127 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | | c0.30 | | | 0.30 | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.6 | | | 16.4 | | | 15.8 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.1 | | | 13.5 | | | 16.4 | | | 15.8 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 56 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 59 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 33 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.12 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.4 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.63 | 1.53 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.5 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.2 | 48.9 | | 4.5 | 10.0 | 20.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 10.7 | | 0.0 | | | | 55.4 | |
| Approach LOS | | D | | | B | | A | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street





















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|-------|-------|------|-------|-------|--------|
| Lane Configurations | ↔↔ | ↕↔ | | ↔ | ↕↕ | ↔ | | ↕↕ | ↔ | ↔ | | ↔ |
| Volume (vph) | 486 | 873 | 131 | 22 | 474 | 273 | 134 | 513 | 61 | 44 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 499 | 287 | 141 | 540 | 64 | 46 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 512 | 1049 | 0 | 23 | 499 | 129 | 0 | 681 | 39 | 46 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.17 | | | c0.21 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.49 | 0.67 | | 0.21 | 0.72 | 0.57 | | 0.89 | 0.12 | 0.87 | | 0.05 |
| Uniform Delay, d1 | 34.7 | 24.5 | | 57.2 | 45.5 | 43.6 | | 48.5 | 39.5 | 60.5 | | 57.4 |
| Progression Factor | 0.75 | 0.20 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 6.2 | 10.1 | | 14.9 | 0.7 | 76.0 | | 0.4 |
| Delay (s) | 26.9 | 6.0 | | 61.6 | 51.7 | 53.8 | | 60.7 | 36.2 | 136.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.8 | | | 52.7 | | | 58.6 | | | 103.6 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.8 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 72.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 897 | 222 | 62 | 638 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 267 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 247 | 69 | 709 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1222 | 0 | 69 | 709 | 0 | 123 | 0 | 43 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | 2 | | 2 | | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | 32.0 | | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | 32.0 | | 32.0 | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | 0.32 | | 0.32 | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1716 | | 160 | 1803 | 350 | | 469 | | 577 | 622 | |
| v/s Ratio Prot | | c0.43 | | | 0.24 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.26 | | c0.11 | | 0.03 | | 0.00 | | |
| v/c Ratio | | 0.71 | | 0.43 | 0.39 | 0.35 | | 0.09 | | 0.01 | 0.02 | |
| Uniform Delay, d1 | | 14.0 | | 10.8 | 10.5 | 26.0 | | 23.8 | | 23.2 | 23.3 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.5 | | 8.3 | 0.6 | 2.8 | | 0.4 | | 0.0 | 0.1 | |
| Delay (s) | | 16.5 | | 19.1 | 11.1 | 28.8 | | 24.2 | | 23.2 | 23.4 | |
| Level of Service | | B | | B | B | C | | C | | C | C | |
| Approach Delay (s) | | 16.5 | | | 11.8 | | 26.5 | | | | 23.3 | |
| Approach LOS | | B | | | B | | C | | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 60.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 338 | 39 | 1052 | 202 | 910 | 0 | 0 | 477 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 487 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 1254 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.23 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.77 | 0.08 | 2.54 | 0.44 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.7 | 26.7 | 37.5 | 29.3 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.8 | 0.3 | 698.4 | 2.0 | 0.2 | | | 50.2 | |
| Delay (s) | | | | 45.5 | 27.1 | 735.9 | 21.3 | 22.1 | | | 87.2 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.1 | | | 22.0 | | | 87.2 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.5 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street

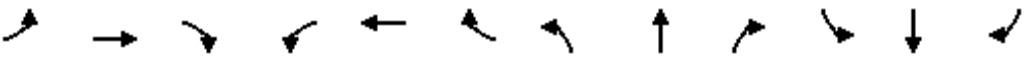
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 92 | 0 | 0 | 0 | 0 | 849 | 662 | 286 | 529 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 95 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 545 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1009 | 0 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 545 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | | Perm | | | Prot | |
| Protected Phases | 4 | | | | | | | 2 | | | 1 6 | |
| Permitted Phases | 4 | | | | | | | 2 | | | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.12 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.20 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.46 | 1.06 | 0.42 | |
| Incremental Delay, d2 | 3.7 | 23.4 | | | | | | 0.4 | 78.3 | 2.2 | 0.1 | |
| Delay (s) | 32.4 | 58.5 | | | | | | 15.7 | 96.0 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.5 | | | 0.0 | | | 50.9 | | | 15.5 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.6 | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | Sum of lost time (s) | | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | ICU Level of Service | | | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|-------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | | ↰ | ↱ | | | ↱ | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 166 | 0 | 0 | 115 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 782 | 1882 | | | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 184 | 0 | 0 | 128 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 184 | 0 | 0 | 130 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | 501 | 1107 | | | 1061 | |
| v/s Ratio Prot | | | | | 0.00 | | 0.00 | c0.10 | | | 0.07 | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | 0.01 | 0.17 | | | 0.12 | |
| Uniform Delay, d1 | | | | 23.4 | 19.9 | | 10.0 | 8.0 | | | 9.6 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.06 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | 0.0 | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.7 | 19.9 | | 10.6 | 9.8 | | | 9.8 | |
| Level of Service | | | | C | B | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 26.0 | | | 9.8 | | | 9.8 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 143 | 42 | 33 | 300 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1686 | | 1005 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 151 | 44 | 35 | 316 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 183 | 0 | 35 | 316 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 640 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.4 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.92 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.8 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|------|------|
| Lane Configurations | W | | W | ↑ | ↑ | W |
| Volume (vph) | 63 | 16 | 10 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.52 | 1.16 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.2 | 5.4 | 8.9 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.9 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 23 | 274 | 14 | 568 | 253 | 0 | 0 | 193 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3738 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.57 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3738 | | 1002 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 304 | 16 | 631 | 281 | 0 | 0 | 214 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 342 | 0 | 631 | 281 | 0 | 0 | 214 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 679 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.93 | 0.27 | | | 0.30 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.0 | 8.1 | | | 15.0 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 21.0 | 0.6 | | | 1.1 | 0.1 |
| Delay (s) | | | | | 23.2 | | 38.0 | 8.7 | | | 16.1 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 29.0 | | | 15.6 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 15 | 11 | 9 | 331 | 528 | 97 | 74 | 340 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.97 | | 1.00 | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1803 | | 1692 | 3236 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1803 | | 892 | 3236 | | 564 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 17 | 12 | 10 | 368 | 587 | 108 | 82 | 378 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 32 | 0 | 368 | 675 | 0 | 82 | 388 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 553 | | 562 | 1467 | | 415 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.06 | | 0.65 | 0.46 | | 0.20 | 0.26 | |
| Uniform Delay, d1 | | | | | 18.4 | | 13.8 | 14.2 | | 12.4 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.4 | 0.9 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.6 | | 14.9 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.6 | | | 12.6 | | | 13.1 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 677 | 12 | 69 | 271 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.57 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 955 | 3232 | | 574 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 713 | 13 | 73 | 285 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 724 | 0 | 73 | 296 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 535 | 1810 | | 321 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.09 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.4 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.18 | 0.07 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.1 | 0.8 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 9.9 | | | 1.2 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 69.9% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 326 | 195 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 362 | 217 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 237 | 241 | 144 | 93 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 628 | 653 | 684 | 641 | 660 | |
| Control Delay (s) | 9.3 | 10.1 | 9.6 | 8.7 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 336 | 13 | 6 | 482 | 39 | 40 | 42 | 53 | 720 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3290 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 971 | 1731 | 1487 | | | 700 | 3290 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 373 | 14 | 7 | 536 | 43 | 44 | 47 | 59 | 800 | 50 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 373 | 7 | 7 | 536 | 56 | 0 | 0 | 106 | 845 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 296 | 528 | 453 | | | 167 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.22 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.45 | 0.01 | 0.02 | 1.02 | 0.12 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.3 | 18.4 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.8 | 0.0 | 0.1 | 43.0 | 0.6 | | | 17.0 | 55.9 | |
| Delay (s) | | 24.2 | 20.2 | 14.5 | 25.7 | 79.5 | 26.9 | | | 52.9 | 95.9 | |
| Level of Service | | C | C | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.9 | | | 71.7 | | | | | 91.1 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.9 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 54 | 300 | 27 | 33 | 4 | 64 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 333 | 30 | 37 | 4 | 71 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 60 | 392 | 0 | 0 | 0 | 75 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.20 | | | | | | c0.05 | |
| v/c Ratio | 0.88 | 0.51 | | | | 0.26 | 0.31 | |
| Uniform Delay, d1 | 38.9 | 35.1 | | | | 38.1 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 79.4 | 2.4 | | | | 2.2 | 1.8 | |
| Delay (s) | 118.3 | 37.5 | | | | 40.4 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 48.0 | | | | 40.3 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 497 | 0 | 0 | 492 | 27 | 118 | 116 | 123 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1929 | | | 1769 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1598 | | | 1929 | | | 1769 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 552 | 0 | 0 | 547 | 30 | 131 | 129 | 137 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 579 | 0 | 0 | 577 | 0 | 0 | 397 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 762 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.76 | | | 0.63 | | | 0.56 | | | | |
| Uniform Delay, d1 | | 13.9 | | | 12.7 | | | 15.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.0 | | | 3.2 | | | 3.2 | | | | |
| Delay (s) | | 21.0 | | | 15.9 | | | 18.3 | | | | |
| Level of Service | | C | | | B | | | B | | | | |
| Approach Delay (s) | | 21.0 | | | 15.9 | | | 18.3 | | | 0.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 76.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 398 | 114 | 67 | 276 | 116 | 148 | 1707 | 130 | 92 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1924 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.65 | 1.00 | | 0.54 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1265 | 1426 | | 1040 | 1396 | 631 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 419 | 120 | 71 | 291 | 122 | 156 | 1797 | 137 | 97 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 0 | 72 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 541 | 49 | 0 | 362 | 50 | 156 | 1797 | 107 | 97 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 518 | 584 | | 426 | 572 | 389 | 1299 | 538 | 152 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.04 | 0.16 | |
| v/s Ratio Perm | | c0.43 | 0.03 | | 0.35 | 0.04 | 0.17 | | 0.08 | 0.26 | | 0.03 |
| v/c Ratio | | 1.04 | 0.08 | | 0.85 | 0.09 | 0.40 | 1.38 | 0.20 | 0.64 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 31.0 | 19.0 | | 28.1 | 19.0 | 14.9 | 30.5 | 19.3 | 23.3 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.25 | 0.75 | 0.39 |
| Incremental Delay, d2 | | 51.6 | 0.3 | | 18.7 | 0.3 | 0.7 | 177.4 | 0.8 | 8.2 | 0.9 | 0.3 |
| Delay (s) | | 82.6 | 19.2 | | 46.8 | 19.3 | 15.6 | 207.9 | 20.2 | 37.4 | 17.7 | 7.9 |
| Level of Service | | F | B | | D | B | B | F | C | D | B | A |
| Approach Delay (s) | | 71.1 | | | 39.9 | | | 181.2 | | | 19.2 | |
| Approach LOS | | E | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 117.4 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.17 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 116.6% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 558 | 59 | 51 | 421 | 50 | 67 | 62 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1630 | | | 1628 | | | 1775 | | | | |
| Flt Permitted | | 0.92 | | | 0.89 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1501 | | | 1455 | | | 1775 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 620 | 66 | 57 | 468 | 56 | 74 | 69 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 25 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 747 | 0 | 0 | 575 | 0 | 0 | 182 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 878 | | | 851 | | | 519 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.50 | | | 0.40 | | | 0.10 | | | | |
| v/c Ratio | | 0.85 | | | 0.68 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 11.2 | | | 9.3 | | | 18.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 10.1 | | | 4.3 | | | 1.9 | | | | |
| Delay (s) | | 21.3 | | | 13.6 | | | 20.0 | | | | |
| Level of Service | | C | | | B | | | C | | | | |
| Approach Delay (s) | | 21.3 | | | 13.6 | | | 20.0 | | | 0.0 | |
| Approach LOS | | C | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 66.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 30 | 509 | 67 | 32 | 450 | 39 | 55 | 150 | 89 | 49 | 192 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1738 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1594 | 1255 | | 1555 | 1288 | | 1417 | 1490 | | 1608 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 32 | 536 | 71 | 34 | 474 | 41 | 58 | 158 | 94 | 52 | 202 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 15 | 0 | 0 | 64 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 568 | 41 | 0 | 508 | 26 | 0 | 216 | 30 | 0 | 299 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 914 | 720 | | 892 | 738 | | 453 | 477 | | 515 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.03 | | 0.33 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.62 | 0.06 | | 0.57 | 0.03 | | 0.48 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.6 | 7.1 | | 10.1 | 7.0 | | 20.5 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.2 | 0.1 | | 2.6 | 0.1 | | 3.6 | 0.3 | | 4.7 | |
| Delay (s) | | 13.8 | 7.2 | | 12.8 | 7.1 | | 24.0 | 18.0 | | 26.0 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.0 | | | 12.3 | | | 22.2 | | | 26.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.6 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 95.3% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 440 | 30 | 17 | 326 | 39 | 55 | 303 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1464 | 2990 | | 1459 | 3535 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.50 | 1.00 | | 0.43 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 777 | 2990 | | 656 | 3535 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 489 | 33 | 19 | 362 | 43 | 61 | 337 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 14 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 93 | 515 | 0 | 19 | 391 | 0 | 61 | 337 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 371 | 1426 | | 313 | 1686 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.11 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.25 | 0.36 | | 0.06 | 0.23 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.1 | 10.7 | | 9.2 | 10.0 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.60 | 0.74 | 0.30 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.6 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.1 | 0.6 | 0.0 |
| Delay (s) | 11.7 | 11.5 | | 9.5 | 10.3 | | 8.0 | 13.7 | 3.7 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.5 | | | 10.3 | | | 11.9 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 98 | 416 | 85 | 44 | 291 | 65 | 73 | 371 | 44 | 57 | 143 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3058 | | 1588 | 3012 | | 1541 | 3022 | | 1403 | 2767 | |
| Flt Permitted | 0.52 | 1.00 | | 0.42 | 1.00 | | 0.62 | 1.00 | | 0.46 | 1.00 | |
| Satd. Flow (perm) | 799 | 3058 | | 697 | 3012 | | 1007 | 3022 | | 678 | 2767 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 438 | 89 | 46 | 306 | 68 | 77 | 391 | 46 | 60 | 151 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 103 | 527 | 0 | 46 | 374 | 0 | 77 | 425 | 0 | 60 | 175 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 384 | 1468 | | 335 | 1446 | | 416 | 1249 | | 280 | 1144 | |
| v/s Ratio Prot | c0.17 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.13 | | | 0.07 | | | 0.08 | | | 0.09 | | |
| v/c Ratio | 0.27 | 0.36 | | 0.14 | 0.26 | | 0.19 | 0.34 | | 0.21 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.3 | | 10.9 | 11.6 | | 14.0 | 15.0 | | 14.2 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 0.9 | 0.4 | | 1.0 | 0.7 | | 1.7 | 0.3 | |
| Delay (s) | 13.3 | 12.9 | | 11.7 | 12.0 | | 15.0 | 15.8 | | 15.9 | 14.1 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 13.0 | | | 12.0 | | | 15.6 | | | 14.5 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 112 | 330 | 38 | 23 | 334 | 47 | 67 | 412 | 26 | 43 | 206 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1842 | | 1533 | 3073 | | 1372 | 2877 | |
| Flt Permitted | 0.44 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 709 | 1576 | | 711 | 1842 | | 940 | 3073 | | 597 | 2877 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 347 | 40 | 24 | 352 | 49 | 71 | 434 | 27 | 45 | 217 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 118 | 387 | 0 | 24 | 401 | 0 | 71 | 461 | 0 | 45 | 276 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 442 | 738 | | 358 | 793 | | 328 | 730 | | 193 | 630 | |
| v/s Ratio Prot | c0.02 | c0.25 | | 0.00 | 0.22 | | c0.01 | c0.15 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.27 | 0.52 | | 0.07 | 0.51 | | 0.22 | 0.63 | | 0.23 | 0.44 | |
| Uniform Delay, d1 | 13.8 | 15.9 | | 15.0 | 17.6 | | 21.6 | 29.1 | | 26.1 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.7 | | 0.1 | 2.3 | | 0.3 | 4.1 | | 0.6 | 2.2 | |
| Delay (s) | 14.1 | 18.6 | | 15.1 | 19.9 | | 21.9 | 33.2 | | 26.8 | 30.9 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.5 | | | 19.6 | | | 31.7 | | | 30.3 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 63.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 69 | 323 | 44 | 65 | 388 | 115 | 59 | 390 | 126 | 56 | 162 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2914 | | 1614 | 3156 | | 1581 | 2918 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2745 | | | 2468 | | 1041 | 3156 | | 628 | 2918 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 77 | 359 | 49 | 72 | 431 | 128 | 66 | 433 | 140 | 62 | 180 | 42 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 485 | 0 | 0 | 631 | 0 | 66 | 573 | 0 | 62 | 222 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1244 | | | 1119 | | 458 | 1389 | | 276 | 1284 | |
| v/s Ratio Prot | | | | | | | | c0.18 | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.26 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.14 | 0.41 | | 0.22 | 0.17 | |
| Uniform Delay, d1 | | 13.6 | | | 15.1 | | 12.6 | 14.4 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.1 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.5 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.5 | | | 17.1 | | | 15.1 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.9% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  |  |
| Volume (vph) | 145 | 523 | 5 | 14 | 661 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 581 | 3144 | | 720 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 581 | 6 | 16 | 734 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 586 | 0 | 16 | 734 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 378 | 2046 | | 468 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.23 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.43 | 0.29 | | 0.03 | 0.35 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.5 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.5 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.6 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 75 | 63 | 190 | 68 | 133 | 1972 | 88 | 71 | 499 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1499 | | 1547 | 1586 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 617 | 1499 | | 524 | 1586 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 79 | 66 | 200 | 72 | 140 | 2076 | 93 | 75 | 525 | 44 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 117 | 289 | 0 | 66 | 256 | 0 | 140 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 254 | 388 | | 232 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.9 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.71 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.9 | 12.3 | | 3.1 | 7.0 | | 2.8 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.4 | 41.2 | | 24.9 | 34.9 | | 10.9 | 309.7 | 8.1 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.6 | | | 32.9 | | | 279.4 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.5 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 26 | 218 | 17 | 15 | 149 | 18 | 18 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1850 | | | 1836 | | | 1902 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1792 | | | 1790 | | | 1856 | | | 1823 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 18 | 15 | 154 | 19 | 19 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 266 | 0 | 0 | 182 | 0 | 0 | 210 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 744 | | | 744 | | | 857 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.36 | | | 0.24 | | | 0.24 | | | 0.24 | |
| Uniform Delay, d1 | | 13.0 | | | 12.4 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.05 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.8 | | | 0.6 | | | 0.7 | |
| Delay (s) | | 14.4 | | | 8.7 | | | 11.8 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.4 | | | 8.7 | | | 11.8 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 44 | 384 | 33 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 49 | 427 | 37 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 49 | 454 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.6 | | 5.7 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.75 | 0.74 | | 0.94 | 0.97 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.9 | 13.5 | | 12.6 | 13.4 | | 5.7 | 6.7 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.4 | | | 13.3 | | | 6.6 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 40.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 13 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1839 | | | 1749 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 14 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 207 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 834 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.02 | 0.92 | | 0.86 | 0.88 | | | 0.95 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.1 | 12.0 | | 10.5 | 11.1 | | | 14.5 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.2 | | | 11.0 | | | 14.5 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.8 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 90 | 127 | 60 | 2 | 84 | 36 | 21 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1879 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.57 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1879 | | 950 | 1870 | | | 1928 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 67 | 2 | 93 | 40 | 23 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 208 | 0 | 2 | 133 | 0 | 0 | 339 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 578 | | 292 | 575 | | | 1097 | | | 1091 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.36 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.5 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.91 | 0.90 | | 0.89 | 0.92 | | | 0.96 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.7 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.5 | 17.5 | | 14.0 | 16.4 | | | 7.7 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.5 | | | 16.3 | | | 7.7 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.6% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.42 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.32 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.1 | 42.0 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.8 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|------|------|------|--------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 240 | 76 | 124 | 376 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 848 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 253 | 80 | 131 | 396 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 303 | 0 | 131 | 396 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 653 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.05 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.20 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.6 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.95 | 2.06 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.2 | 19.8 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.2 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 185 | 0 | 0 | 326 | 69 | 174 | 554 | 332 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.34 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 599 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 195 | 0 | 0 | 343 | 73 | 183 | 583 | 349 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 234 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 195 | 0 | 0 | 398 | 0 | 183 | 583 | 115 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 678 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.08 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.67 | | 0.32 | 0.99 | 0.23 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.3 | | 25.1 | 33.4 | 24.3 | | | |
| Progression Factor | 0.25 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.91 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.9 | | 0.9 | 27.8 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.2 | | 19.8 | 54.1 | 47.1 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.2 | | | 46.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|----------------------|------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 463 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 4 | 216 | 196 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3108 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3108 | | 279 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 482 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 225 | 204 |
| RTOR Reduction (vph) | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 0 | 725 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 225 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1119 | | 391 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.65 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.7 | | 12.5 | 10.9 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.79 | 0.92 |
| Incremental Delay, d2 | | 2.9 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.6 | | 7.0 | 7.6 | | | | | 16.0 | 18.8 | 21.5 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.6 | | | 7.6 | | | 0.0 | | | 20.1 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.1 | | HCM Level of Service | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | Sum of lost time (s) | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.6% | | ICU Level of Service | | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 407 | 60 | 0 | 0 | 57 | 5 | 569 | 646 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3041 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2338 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 420 | 62 | 0 | 0 | 59 | 5 | 587 | 666 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 210 | 272 | 0 | 0 | 60 | 0 | 587 | 666 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1445 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.31 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.23 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 42.9 | 66.6 | 0.2 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 74.4 | 98.1 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.8 | | | 37.4 | | | 83.8 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.5 | | | | HCM Level of Service | | E | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.6% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 163 | 289 | 70 | 67 | 191 | 116 | 43 | 1151 | 97 | 96 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2843 | | | 2772 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.66 | | | 0.78 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1909 | | | 2178 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 301 | 73 | 70 | 199 | 121 | 45 | 1199 | 101 | 100 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 61 | 0 | 0 | 0 | 38 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 530 | 0 | 0 | 329 | 0 | 45 | 1199 | 63 | 100 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 874 | | | 717 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.21 | | | c0.15 | | 0.06 | | 0.05 | 0.26 | | 0.01 |
| v/c Ratio | | 0.61 | | | 0.46 | | 0.15 | 0.99 | 0.12 | 0.69 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 19.0 | | | 22.5 | | 14.7 | 25.6 | 16.7 | 19.1 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.87 | 1.41 | 1.83 | 1.64 | 3.16 |
| Incremental Delay, d2 | | 3.1 | | | 2.1 | | 0.6 | 17.5 | 0.3 | 22.2 | 1.0 | 0.1 |
| Delay (s) | | 22.1 | | | 24.6 | | 20.1 | 39.9 | 23.8 | 57.2 | 31.8 | 51.1 |
| Level of Service | | C | | | C | | C | D | C | E | C | D |
| Approach Delay (s) | | 22.1 | | | 24.6 | | | 38.0 | | | 37.1 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 81.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 467 | 0 | 0 | 346 | 82 | 28 | 63 | 101 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1707 | | | 1670 | | | 1581 | | | | |
| Flt Permitted | | 0.94 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1604 | | | 1670 | | | 1581 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 519 | 0 | 0 | 384 | 91 | 31 | 70 | 112 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 61 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 568 | 0 | 0 | 462 | 0 | 0 | 152 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 839 | | | 874 | | | 559 | | | | |
| v/s Ratio Prot | | | | | 0.28 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.68 | | | 0.53 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 11.4 | | | 10.2 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.66 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.4 | | | 1.8 | | | 1.2 | | | | |
| Delay (s) | | 15.8 | | | 8.5 | | | 16.2 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 15.8 | | | 8.5 | | | 16.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 74.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 45 | 418 | 34 | 20 | 425 | 49 | 26 | 175 | 35 | 51 | 107 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1843 | | | 3185 | | | 3148 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.91 | | | 0.83 | |
| Satd. Flow (perm) | | 1759 | | | 1795 | | | 2928 | | | 2639 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 464 | 38 | 22 | 472 | 54 | 29 | 194 | 39 | 57 | 119 | 23 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 548 | 0 | 0 | 542 | 0 | 0 | 240 | 0 | 0 | 186 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 812 | | | 828 | | | 1216 | | | 1096 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.30 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.67 | | | 0.65 | | | 0.20 | | | 0.17 | |
| Uniform Delay, d1 | | 13.7 | | | 13.5 | | | 12.1 | | | 11.9 | |
| Progression Factor | | 0.67 | | | 0.55 | | | 0.87 | | | 0.55 | |
| Incremental Delay, d2 | | 3.5 | | | 3.9 | | | 0.4 | | | 0.3 | |
| Delay (s) | | 12.7 | | | 11.3 | | | 10.9 | | | 6.9 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 12.7 | | | 11.3 | | | 10.9 | | | 6.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 81.1% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 281 | 23 | 28 | 347 | 61 | 55 | 319 | 89 | 48 | 96 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2933 | | 1584 | 2945 | | 1497 | 3034 | | 1594 | 2899 | |
| Flt Permitted | 0.43 | 1.00 | | 0.53 | 1.00 | | 0.66 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 684 | 2933 | | 884 | 2945 | | 1046 | 3034 | | 809 | 2899 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 58 | 312 | 26 | 31 | 386 | 68 | 61 | 354 | 99 | 53 | 107 | 32 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 58 | 329 | 0 | 31 | 432 | 0 | 61 | 414 | 0 | 53 | 124 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 232 | 993 | | 299 | 997 | | 563 | 1634 | | 436 | 1561 | |
| v/s Ratio Prot | | 0.11 | | | c0.15 | | | c0.14 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.04 | | | 0.06 | | | 0.07 | | |
| v/c Ratio | 0.25 | 0.33 | | 0.10 | 0.43 | | 0.11 | 0.25 | | 0.12 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 16.0 | | 14.7 | 16.7 | | 7.4 | 8.0 | | 7.4 | 7.2 | |
| Progression Factor | 0.58 | 0.55 | | 0.76 | 0.79 | | 0.68 | 0.68 | | 1.30 | 1.35 | |
| Incremental Delay, d2 | 2.1 | 0.7 | | 0.7 | 1.3 | | 0.4 | 0.4 | | 0.6 | 0.1 | |
| Delay (s) | 11.1 | 9.6 | | 11.9 | 14.5 | | 5.4 | 5.8 | | 10.2 | 9.8 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.3 | | | 5.7 | | | 9.9 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.9 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.32 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 393 | 28 | 37 | 371 | 82 | 20 | 308 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1385 | 3013 | | 1335 | 3540 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 665 | 3013 | | 672 | 3540 | | | 3226 | | | 2808 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 88 | 414 | 29 | 39 | 391 | 86 | 21 | 324 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 29 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 88 | 435 | 0 | 39 | 448 | 0 | 0 | 375 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 317 | 1437 | | 320 | 1688 | | | 1290 | | | 1123 | |
| v/s Ratio Prot | | c0.14 | | | 0.13 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.28 | 0.30 | | 0.12 | 0.27 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.4 | | 9.4 | 10.2 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.59 | 1.63 | | 0.78 | 0.77 | | | 0.36 | | | 0.64 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.7 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 18.4 | 17.5 | | 8.1 | 8.1 | | | 5.3 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.7 | | | 8.1 | | | 5.3 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 99 | 303 | 100 | 104 | 357 | 104 | 88 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3034 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.79 | | | 0.78 | |
| Satd. Flow (perm) | | 1227 | 1409 | | 2325 | | | 1456 | | | 1442 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 337 | 111 | 116 | 397 | 116 | 98 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 30 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 447 | 58 | 0 | 599 | 0 | 0 | 261 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 642 | 737 | | 1216 | | | 470 | | | 466 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.04 | | 0.26 | | | c0.18 | | | 0.18 | |
| v/c Ratio | | 0.70 | 0.08 | | 0.49 | | | 0.55 | | | 0.55 | |
| Uniform Delay, d1 | | 11.6 | 7.7 | | 10.0 | | | 18.1 | | | 18.1 | |
| Progression Factor | | 2.01 | 5.71 | | 0.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.0 | 0.2 | | 1.4 | | | 4.7 | | | 4.6 | |
| Delay (s) | | 29.3 | 44.2 | | 5.5 | | | 22.8 | | | 22.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 32.3 | | | 5.5 | | | 22.8 | | | 22.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 72.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 74 | 384 | 21 | 15 | 442 | 63 | 37 | 103 | 41 | 43 | 90 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1573 | 3002 | | | 3454 | | | 3403 | |
| Flt Permitted | 0.39 | 1.00 | | 0.46 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 606 | 3018 | | 768 | 3002 | | | 3030 | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 82 | 427 | 23 | 17 | 491 | 70 | 41 | 114 | 46 | 48 | 100 | 109 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 60 | 0 |
| Lane Group Flow (vph) | 82 | 444 | 0 | 17 | 544 | 0 | 0 | 176 | 0 | 0 | 197 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 261 | 1300 | | 331 | 1293 | | | 1352 | | | 1345 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.31 | 0.34 | | 0.05 | 0.42 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.3 | | 10.8 | 12.9 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.97 | 1.00 | | 1.15 | 0.99 | | | 0.99 | | | 0.80 | |
| Incremental Delay, d2 | 2.4 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.2 | 12.8 | | 12.5 | 13.2 | | | 10.7 | | | 8.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.0 | | | 13.2 | | | 10.7 | | | 8.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 456 | 73 | 94 | 464 | 284 | 48 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3075 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2018 | | | 2281 | | | 2771 | | | 2008 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 507 | 81 | 104 | 516 | 316 | 53 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 99 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 668 | 0 | 0 | 837 | 0 | 0 | 491 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 807 | | | 912 | | | 1271 | | | 618 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.37 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.83 | | | 0.92 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.5 | | | 18.5 | | | 12.0 | | | 20.3 | |
| Progression Factor | | 1.74 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 9.4 | | | 15.5 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 39.7 | | | 34.0 | | | 12.9 | | | 26.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 39.7 | | | 34.0 | | | 12.9 | | | 26.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 29.9 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.83 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 88.6% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 724 | 119 | 45 | 759 | 0 | 137 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3032 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2543 | | | 1310 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 804 | 132 | 50 | 843 | 0 | 152 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 918 | 0 | 0 | 893 | 0 | 0 | 209 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.16 | | | | | |
| v/c Ratio | 0.48 | | | 0.96 | | | 0.90 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.8 | | | 36.2 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.9 | | | 37.6 | | | | | |
| Delay (s) | 0.7 | | | 62.5 | | | 73.8 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.7 | | | 62.5 | | | 73.8 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.7 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.81 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.7% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 188 | 274 | 646 | 183 | 103 | 20 | 185 | 78 | 7 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 508 | 3020 | | 339 | 3257 | 1457 | | 1581 | | 690 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 209 | 304 | 718 | 203 | 114 | 22 | 206 | 87 | 8 | 86 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 74 | 0 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 137 | 725 | 0 | 304 | 718 | 99 | 0 | 268 | 0 | 87 | 8 | 40 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Effective Green, g (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Actuated g/C Ratio | 0.44 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 331 | 1027 | | 380 | 1274 | 709 | | 365 | | 338 | 617 | 677 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.71 | | 0.80 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.8 | | 14.8 | 21.4 | 12.7 | | 32.0 | | 21.2 | 18.5 | 13.3 |
| Progression Factor | 1.91 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.7 | | 12.0 | 1.8 | 0.1 | | 8.0 | | 0.4 | 0.0 | 0.1 |
| Delay (s) | 30.5 | 44.5 | | 26.8 | 23.2 | 12.8 | | 40.0 | | 21.6 | 18.5 | 13.3 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.3 | | | 22.4 | | | 40.0 | | | 17.5 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 74.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 518 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 576 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 |
| cM capacity (veh/h) | 961 | | | 973 | | | 19 | 184 | 700 | 231 | 184 | 692 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 288 | 288 | 274 | 203 | 393 | 36 | 636 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | |
| cSH | 1700 | 1700 | 1700 | 973 | 1700 | 231 | 692 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | |
| Lane LOS | | | | A | | C | E | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 40.6 | | | | | | |
| Approach LOS | | | | | | E | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | 12.9 | | | | | | | | | | |
| Intersection Capacity Utilization | | 59.7% | | ICU Level of Service | | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 550 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 611 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 306 | 306 | 597 | | | |
| Volume Left (vph) | 306 | 306 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 513 | 513 | 618 | | | |
| Control Delay (s) | 18.3 | 18.3 | 49.2 | | | |
| Approach Delay (s) | 18.3 | | 49.2 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 353 | 46 | 127 | 326 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3094 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.44 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3094 | | 730 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 392 | 51 | 141 | 362 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 431 | 0 | 141 | 362 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 520 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.14 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.27 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.4 | | 11.5 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.27 | 0.24 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.2 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.1 | | 4.4 | 2.3 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.1 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 34.2% | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 357 | 0 | 0 | 404 | 76 | 49 | 65 | 45 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3074 | | | 4413 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 650 | 3257 | | | 3074 | | | 4413 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 397 | 0 | 0 | 449 | 84 | 54 | 72 | 50 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 397 | 0 | 0 | 515 | 0 | 0 | 142 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 482 | 1839 | | | 1266 | | | 1402 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.22 | | | 0.41 | | | 0.10 | | | | |
| Uniform Delay, d1 | 12.2 | 9.2 | | | 17.7 | | | 20.4 | | | | |
| Progression Factor | 0.33 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.1 | | | | |
| Delay (s) | 4.6 | 3.2 | | | 18.6 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.6 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 323 | 39 | 34 | 247 | 31 | 118 | 85 | 61 | 58 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2982 | | | 2979 | | | 1787 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.87 | | | 0.75 | | | 0.88 | |
| Satd. Flow (perm) | | 2664 | | | 2613 | | | 1378 | | | 1560 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 359 | 43 | 38 | 274 | 34 | 131 | 94 | 68 | 64 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 13 | 0 | 0 | 17 | 0 | 0 | 47 | 0 |
| Lane Group Flow (vph) | 0 | 433 | 0 | 0 | 333 | 0 | 0 | 276 | 0 | 0 | 258 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 943 | | | 925 | | | 678 | | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.13 | | | c0.20 | | | 0.17 | |
| v/c Ratio | | 0.46 | | | 0.36 | | | 0.41 | | | 0.34 | |
| Uniform Delay, d1 | | 16.2 | | | 15.6 | | | 10.5 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.6 | | | 1.1 | | | 1.8 | | | 1.2 | |
| Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.43 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 63.7% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 196 | 202 | 39 | 50 | 176 | 62 | 71 | 1009 | 70 | 75 | 430 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.43 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 673 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 206 | 213 | 41 | 53 | 185 | 65 | 75 | 1062 | 74 | 79 | 453 | 92 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 43 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 206 | 235 | 0 | 53 | 209 | 0 | 75 | 1062 | 31 | 79 | 453 | 36 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 323 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.03 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.35 | | c0.03 | 0.15 | |
| v/s Ratio Perm | c0.17 | | | 0.04 | | | 0.09 | | 0.02 | 0.21 | | 0.03 |
| v/c Ratio | 0.56 | 0.24 | | 0.14 | 0.18 | | 0.23 | 0.90 | 0.06 | 0.55 | 0.39 | 0.07 |
| Uniform Delay, d1 | 21.3 | 20.7 | | 18.4 | 20.3 | | 15.0 | 24.4 | 16.3 | 17.5 | 18.7 | 16.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.00 | 0.61 | 0.80 |
| Incremental Delay, d2 | 6.2 | 0.6 | | 0.8 | 0.3 | | 1.7 | 11.0 | 0.2 | 12.9 | 0.9 | 0.3 |
| Delay (s) | 27.5 | 21.3 | | 19.2 | 20.7 | | 16.7 | 35.5 | 16.5 | 47.9 | 12.3 | 13.4 |
| Level of Service | C | C | | B | C | | B | D | B | D | B | B |
| Approach Delay (s) | | 24.1 | | | 20.4 | | | 33.1 | | | 16.9 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.2 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | Sum of lost time (s) | | | 16.0 | | | | | |
| Intersection Capacity Utilization | | | 72.0% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

1/14/2013























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|------|----------------------|-------|------|------|------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ |
| Volume (vph) | 40 | 256 | 18 | 14 | 216 | 8 | 35 | 121 | 25 | 20 | 59 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1973 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1823 | 1382 | | 1910 | 1331 | | 1866 | 1452 | | 1811 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 42 | 269 | 19 | 15 | 227 | 8 | 37 | 127 | 26 | 21 | 62 | 44 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 0 | 311 | 9 | 0 | 242 | 4 | 0 | 164 | 11 | 0 | 83 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 841 | 638 | | 882 | 614 | | 775 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.09 | 0.01 | | 0.05 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.21 | 0.02 | | 0.11 | 0.03 |
| Uniform Delay, d1 | | 11.4 | 9.5 | | 10.8 | 9.4 | | 12.2 | 11.2 | | 11.6 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.46 | 0.37 | | 1.16 | 1.42 | | 0.95 | 0.86 |
| Incremental Delay, d2 | | 1.3 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.8 | 3.5 | | 14.8 | 15.9 | | 11.3 | 9.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.7 | | | 14.9 | | | 10.8 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 285 | 10 | 17 | 211 | 34 | 13 | 247 | 35 | 47 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3025 | | 1520 | 2976 | | 1520 | 2983 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.55 | 1.00 | | 0.68 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3025 | | 886 | 2976 | | 1091 | 2983 | | 871 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 317 | 11 | 19 | 234 | 38 | 14 | 274 | 39 | 52 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 20 | 0 | 0 | 17 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 324 | 0 | 19 | 252 | 0 | 14 | 296 | 0 | 52 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1489 | | 300 | 1007 | | 453 | 1239 | | 362 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.08 | | | c0.10 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.06 | | |
| v/c Ratio | 0.45 | 0.22 | | 0.06 | 0.25 | | 0.03 | 0.24 | | 0.14 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 9.4 | | 14.5 | 15.5 | | 11.3 | 12.3 | | 11.8 | 11.5 | |
| Progression Factor | 0.85 | 0.49 | | 0.85 | 0.82 | | 0.54 | 0.55 | | 1.15 | 1.16 | |
| Incremental Delay, d2 | 8.3 | 0.3 | | 0.4 | 0.6 | | 0.1 | 0.4 | | 0.8 | 0.1 | |
| Delay (s) | 31.5 | 4.9 | | 12.8 | 13.4 | | 6.2 | 7.2 | | 14.4 | 13.4 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.8 | | | 13.4 | | | 7.2 | | | 13.7 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 253 | 85 | 242 | 216 | 43 | 43 | 297 | 56 | 25 | 185 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2926 | | 1520 | 2964 | | | 3171 | | | 3188 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.90 | | | 0.89 | |
| Satd. Flow (perm) | 921 | 2926 | | 1520 | 2964 | | | 2857 | | | 2857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 281 | 94 | 269 | 240 | 48 | 48 | 330 | 62 | 28 | 206 | 28 |
| RTOR Reduction (vph) | 0 | 51 | 0 | 0 | 25 | 0 | 0 | 20 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 41 | 324 | 0 | 269 | 263 | 0 | 0 | 420 | 0 | 0 | 248 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 283 | 900 | | 140 | 1322 | | | 1099 | | | 1099 | |
| v/s Ratio Prot | | c0.11 | | c0.18 | 0.09 | | | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | c0.15 | | | 0.09 | |
| v/c Ratio | 0.14 | 0.36 | | 1.92 | 0.20 | | | 0.38 | | | 0.23 | |
| Uniform Delay, d1 | 16.3 | 17.5 | | 29.5 | 10.9 | | | 14.4 | | | 13.5 | |
| Progression Factor | 0.64 | 0.55 | | 1.32 | 1.10 | | | 1.26 | | | 0.81 | |
| Incremental Delay, d2 | 1.1 | 1.1 | | 433.0 | 0.2 | | | 0.2 | | | 0.5 | |
| Delay (s) | 11.5 | 10.7 | | 472.0 | 12.3 | | | 18.4 | | | 11.4 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | | 10.8 | | | 234.3 | | | 18.4 | | | 11.4 | |
| Approach LOS | | B | | | F | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 87.2 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 56.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 298 | 14 | 70 | 466 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1587 | | | 1566 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1451 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 331 | 16 | 78 | 518 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 363 | 0 | 0 | 668 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 935 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.24 | | | 0.46 | | | 0.06 | | | | |
| v/c Ratio | | 0.37 | | | 0.71 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.6 | | | 20.3 | | | | |
| Progression Factor | | 1.70 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.0 | | | 4.6 | | | 0.8 | | | | |
| Delay (s) | | 10.1 | | | 12.3 | | | 21.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 10.1 | | | 12.3 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

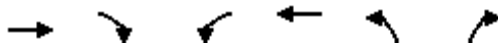


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 96 | 364 | 469 | 44 | 66 | 134 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 101 | 383 | 494 | 46 | 69 | 141 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.87 | | | | 0.87 | 0.87 |
| vC, conflicting volume | 561 | | | | 1128 | 541 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 419 | | | | 1072 | 396 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 63 | 75 |
| cM capacity (veh/h) | 932 | | | | 185 | 557 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 484 | 540 | 69 | 141 | | |
| Volume Left | 101 | 0 | 69 | 0 | | |
| Volume Right | 0 | 46 | 0 | 141 | | |
| cSH | 932 | 1700 | 185 | 557 | | |
| Volume to Capacity | 0.11 | 0.32 | 0.37 | 0.25 | | |
| Queue Length 95th (ft) | 9 | 0 | 40 | 25 | | |
| Control Delay (s) | 3.0 | 0.0 | 35.6 | 13.6 | | |
| Lane LOS | A | | E | B | | |
| Approach Delay (s) | 3.0 | 0.0 | 20.9 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.7 | | | |
| Intersection Capacity Utilization | | | 69.6% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013





















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | ➡ | | | ➡ | ➡ | |
| Volume (vph) | 472 | 1 | 27 | 675 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1661 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 524 | 1 | 30 | 750 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 525 | 0 | 0 | 780 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 606 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.47 | | |
| v/c Ratio | 0.44 | | | 1.29 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.06 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 141.4 | | |
| Delay (s) | 0.4 | | | 168.4 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.4 | | | 168.4 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 100.8 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 0.87 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 63.9% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013




| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | | |  | | | | | |   |  |
| Volume (veh/h) | 0 | 184 | 193 | 25 | 561 | 0 | 0 | 0 | 0 | 3 | 0 | 263 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 204 | 214 | 28 | 623 | 0 | 0 | 0 | 0 | 3 | 0 | 292 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 623 | | | 204 | | | 991 | 991 | 209 | 781 | 883 | 623 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 623 | | | 204 | | | 991 | 991 | 209 | 781 | 883 | 623 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 31 |
| cM capacity (veh/h) | 968 | | | 985 | | | 62 | 241 | 803 | 282 | 279 | 424 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 136 | 283 | 651 | 3 | 292 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 214 | 0 | 0 | 292 | | | | | | | |
| cSH | 1700 | 1700 | 985 | 282 | 424 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.69 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 127 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.9 | 30.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 30.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.9% | ICU Level of Service | | B | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 187 | 0 | 586 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 208 | 0 | 651 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 651 | | | |
| Volume Left (vph) | 104 | 104 | 651 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.88 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 32.1 | | | |
| Approach Delay (s) | 10.3 | | 32.1 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 26.8 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 564 | 210 | 168 | 497 | 0 | 0 | 0 | 0 | 132 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 594 | 221 | 177 | 523 | 0 | 0 | 0 | 0 | 139 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 124 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 93 |
| Lane Group Flow (vph) | 0 | 594 | 97 | 0 | 700 | 0 | 0 | 0 | 0 | 76 | 246 | 65 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.1 | 39.1 | | 71.1 | | | | | 20.4 | 20.4 | 65.5 |
| Effective Green, g (s) | | 39.1 | 39.1 | | 71.1 | | | | | 20.4 | 20.4 | 65.5 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.44 | | | | | 0.13 | 0.13 | 0.41 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 728 | 294 | | 1498 | | | | | 172 | 471 | 459 |
| v/s Ratio Prot | | c0.20 | | | c0.21 | | | | | 0.06 | c0.07 | |
| v/s Ratio Perm | | | 0.08 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.82 | 0.33 | | 0.47 | | | | | 0.44 | 0.52 | 0.14 |
| Uniform Delay, d1 | | 57.1 | 49.7 | | 31.2 | | | | | 64.5 | 65.3 | 29.6 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 9.8 | 3.0 | | 0.1 | | | | | 1.8 | 1.1 | 0.1 |
| Delay (s) | | 66.9 | 52.7 | | 0.7 | | | | | 66.3 | 66.3 | 29.8 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 63.0 | | | 0.7 | | | 0.0 | | | 56.3 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 31.4 | | |
| Intersection Capacity Utilization | | | 56.8% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 484 | 0 | 0 | 427 | 93 | 238 | 150 | 178 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.93 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2975 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2975 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 538 | 0 | 0 | 474 | 103 | 264 | 167 | 198 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 99 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 538 | 0 | 0 | 474 | 26 | 216 | 314 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 80.9 | 80.9 | | | 33.6 | 33.6 | 18.6 | 18.6 | | | | |
| Effective Green, g (s) | 80.9 | 80.9 | | | 33.6 | 33.6 | 18.6 | 18.6 | | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.21 | 0.21 | 0.12 | 0.12 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 796 | 1702 | | | 661 | 306 | 178 | 346 | | | | |
| v/s Ratio Prot | 0.15 | c0.16 | | | c0.15 | | c0.14 | 0.11 | | | | |
| v/s Ratio Perm | | | | | | 0.02 | | | | | | |
| v/c Ratio | 0.30 | 0.32 | | | 0.72 | 0.08 | 1.21 | 0.91 | | | | |
| Uniform Delay, d1 | 23.0 | 23.3 | | | 58.8 | 50.8 | 70.7 | 69.9 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 3.7 | 0.1 | 136.5 | 26.3 | | | | |
| Delay (s) | 1.7 | 1.7 | | | 62.5 | 50.9 | 207.2 | 96.1 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.7 | | | 60.4 | | 134.3 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 60.9 | | | HCM Level of Service | | E | | | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | 28.9 | | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 220 | 452 | 75 | 56 | 186 | 54 | 88 | 824 | 148 | 93 | 448 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1327 | 1596 | 1724 | | 1525 | 2931 | | 1509 | 2870 | |
| Flt Permitted | 0.46 | 1.00 | 1.00 | 0.20 | 1.00 | | 0.34 | 1.00 | | 0.12 | 1.00 | |
| Satd. Flow (perm) | 749 | 1556 | 1327 | 340 | 1724 | | 542 | 2931 | | 192 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 476 | 79 | 59 | 196 | 57 | 93 | 867 | 156 | 98 | 472 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 12 | 0 | 0 | 16 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 232 | 476 | 26 | 59 | 241 | 0 | 93 | 1007 | 0 | 98 | 559 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 340 | 527 | 435 | 182 | 536 | | 277 | 1118 | | 147 | 1095 | |
| v/s Ratio Prot | c0.05 | c0.31 | | 0.02 | 0.14 | | 0.02 | c0.34 | | c0.03 | 0.19 | |
| v/s Ratio Perm | 0.22 | | 0.02 | 0.10 | | | 0.12 | | | 0.25 | | |
| v/c Ratio | 0.68 | 0.90 | 0.06 | 0.32 | 0.45 | | 0.34 | 0.90 | | 0.67 | 0.51 | |
| Uniform Delay, d1 | 22.7 | 28.2 | 20.6 | 21.1 | 24.7 | | 16.3 | 26.1 | | 18.8 | 21.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.6 | 21.4 | 0.3 | 1.0 | 2.7 | | 0.7 | 11.6 | | 10.9 | 1.7 | |
| Delay (s) | 28.3 | 49.5 | 20.9 | 22.1 | 27.4 | | 17.0 | 37.6 | | 29.6 | 22.9 | |
| Level of Service | C | D | C | C | C | | B | D | | C | C | |
| Approach Delay (s) | | 40.4 | | | 26.4 | | | 35.9 | | | 23.9 | |
| Approach LOS | | D | | | C | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 44 | 568 | 16 | 26 | 257 | 28 | 35 | 80 | 102 | 45 | 44 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.94 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1908 | 1482 | | 1599 | 1198 | | 1812 | | | 1823 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.93 | 1.00 | | 0.95 | | | 0.86 | |
| Satd. Flow (perm) | | 1844 | 1482 | | 1499 | 1198 | | 1732 | | | 1604 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 46 | 598 | 17 | 27 | 271 | 29 | 37 | 84 | 107 | 47 | 46 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 15 | 0 | 49 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 0 | 644 | 11 | 0 | 298 | 14 | 0 | 179 | 0 | 0 | 110 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 6 | | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 908 | 730 | | 738 | 590 | | 719 | | | 666 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.01 | | 0.20 | 0.01 | | c0.10 | | | 0.07 | |
| v/c Ratio | | 0.71 | 0.01 | | 0.40 | 0.02 | | 0.25 | | | 0.17 | |
| Uniform Delay, d1 | | 12.9 | 8.4 | | 10.5 | 8.5 | | 12.4 | | | 11.9 | |
| Progression Factor | | 1.00 | 1.00 | | 1.90 | 2.84 | | 1.00 | | | 1.37 | |
| Incremental Delay, d2 | | 4.7 | 0.0 | | 0.1 | 0.0 | | 0.8 | | | 0.5 | |
| Delay (s) | | 17.5 | 8.5 | | 20.0 | 24.1 | | 13.2 | | | 16.8 | |
| Level of Service | | B | A | | C | C | | B | | | B | |
| Approach Delay (s) | | 17.3 | | | 20.4 | | | 13.2 | | | 16.8 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.50 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 74.6% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 75 | 627 | 24 | 27 | 238 | 8 | 41 | 228 | 108 | 18 | 53 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1392 | | 1581 | 1497 | | 1755 | 1390 | | 1656 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.35 | 1.00 | | 0.95 | 1.00 | | 0.93 | |
| Satd. Flow (perm) | | 1545 | 1392 | | 562 | 1497 | | 1677 | 1390 | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 660 | 25 | 28 | 251 | 8 | 43 | 240 | 114 | 19 | 56 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 5 | 0 | 0 | 41 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 739 | 17 | 0 | 279 | 3 | 0 | 283 | 73 | 0 | 91 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 547 | 493 | | 199 | 530 | | 826 | 684 | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.48 | 0.01 | | c0.50 | 0.00 | | c0.17 | 0.05 | | 0.06 | |
| v/c Ratio | | 1.35 | 0.03 | | 1.40 | 0.01 | | 0.34 | 0.11 | | 0.12 | |
| Uniform Delay, d1 | | 21.0 | 13.7 | | 21.0 | 13.6 | | 10.1 | 8.8 | | 8.9 | |
| Progression Factor | | 1.59 | 1.78 | | 0.80 | 0.80 | | 0.39 | 0.25 | | 1.09 | |
| Incremental Delay, d2 | | 167.4 | 0.1 | | 207.4 | 0.0 | | 0.8 | 0.2 | | 0.3 | |
| Delay (s) | | 200.8 | 24.6 | | 224.1 | 10.9 | | 4.7 | 2.4 | | 10.0 | |
| Level of Service | | F | C | | F | B | | A | A | | A | |
| Approach Delay (s) | | 195.1 | | | 218.2 | | | 4.0 | | | 10.0 | |
| Approach LOS | | F | | | F | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 137.8 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 0.79 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 88.5% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 676 | 21 | 31 | 9 | 18 | 15 | 26 | 363 | 19 | 9 | 220 | 226 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.98 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1750 | 1390 | | 1761 | | | 1979 | | | 1873 | 1328 |
| Flt Permitted | | 0.72 | 1.00 | | 0.62 | | | 0.97 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1330 | 1390 | | 1111 | | | 1934 | | | 1848 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 751 | 23 | 34 | 10 | 20 | 17 | 29 | 403 | 21 | 10 | 244 | 251 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 13 | 0 | 0 | 3 | 0 | 0 | 0 | 127 |
| Lane Group Flow (vph) | 0 | 774 | 24 | 0 | 34 | 0 | 0 | 450 | 0 | 0 | 254 | 124 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 604 | 577 | | 291 | | | 952 | | | 910 | 654 |
| v/s Ratio Prot | | c0.16 | | | | | | | | | | |
| v/s Ratio Perm | | 0.37 | 0.02 | | 0.03 | | | c0.23 | | | 0.14 | 0.09 |
| v/c Ratio | | 1.28 | 0.04 | | 0.12 | | | 0.47 | | | 0.28 | 0.19 |
| Uniform Delay, d1 | | 19.0 | 11.3 | | 18.3 | | | 10.9 | | | 9.7 | 9.2 |
| Progression Factor | | 1.14 | 1.51 | | 1.00 | | | 0.59 | | | 0.51 | 1.01 |
| Incremental Delay, d2 | | 127.9 | 0.0 | | 0.8 | | | 1.6 | | | 0.1 | 0.1 |
| Delay (s) | | 149.5 | 17.1 | | 19.1 | | | 8.0 | | | 5.1 | 9.4 |
| Level of Service | | F | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 143.9 | | | 19.1 | | | 8.0 | | | 7.2 | |
| Approach LOS | | F | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 68.7 | | | | HCM Level of Service | | | | E | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 93.7% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 989 | 222 | 274 | 1130 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.13 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 224 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1041 | 234 | 288 | 1189 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | 61 |
| Lane Group Flow (vph) | 0 | 1245 | 0 | 288 | 1189 | 0 | 0 | 0 | 0 | 234 | 392 | 149 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 48.1 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Effective Green, g (s) | | 48.1 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Actuated g/C Ratio | | 0.46 | | 0.66 | 0.66 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1980 | | 365 | 2129 | | | | | 320 | 612 | 306 |
| v/s Ratio Prot | | 0.29 | | c0.13 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.40 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.63 | | 0.79 | 0.56 | | | | | 0.73 | 0.64 | 0.49 |
| Uniform Delay, d1 | | 21.7 | | 19.0 | 9.6 | | | | | 37.7 | 36.8 | 35.4 |
| Progression Factor | | 1.00 | | 0.96 | 1.64 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.5 | | 6.1 | 0.6 | | | | | 8.6 | 2.4 | 1.4 |
| Delay (s) | | 23.2 | | 24.4 | 16.4 | | | | | 46.3 | 39.2 | 36.8 |
| Level of Service | | C | | C | B | | | | | D | D | D |
| Approach Delay (s) | | 23.2 | | | 17.9 | | | 0.0 | | | 40.5 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 105.5% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |  | |    | | | | |
| Volume (vph) | 311 | 953 | 0 | 0 | 855 | 234 | 549 | 365 | 484 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.99 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4390 | | | | |
| Flt Permitted | 0.18 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 568 | 3138 | | | 3119 | 1449 | | 4390 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 1003 | 0 | 0 | 900 | 246 | 578 | 384 | 509 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 105 | 0 | 88 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 1003 | 0 | 0 | 900 | 141 | 0 | 1383 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 62.8 | 62.8 | | | 45.3 | 45.3 | | 30.2 | | | | |
| Effective Green, g (s) | 62.8 | 62.8 | | | 45.3 | 45.3 | | 30.2 | | | | |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.43 | 0.43 | | 0.29 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 597 | 1877 | | | 1346 | 625 | | 1263 | | | | |
| v/s Ratio Prot | 0.06 | c0.32 | | | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.27 | | | | | 0.10 | | 0.31 | | | | |
| v/c Ratio | 0.55 | 0.53 | | | 0.67 | 0.23 | | 1.09 | | | | |
| Uniform Delay, d1 | 12.8 | 12.5 | | | 23.9 | 18.8 | | 37.4 | | | | |
| Progression Factor | 0.61 | 0.77 | | | 0.97 | 1.49 | | 1.00 | | | | |
| Incremental Delay, d2 | 0.9 | 0.9 | | | 1.6 | 0.5 | | 55.3 | | | | |
| Delay (s) | 8.7 | 10.5 | | | 24.7 | 28.5 | | 92.7 | | | | |
| Level of Service | A | B | | | C | C | | F | | | | |
| Approach Delay (s) | | 10.1 | | | 25.5 | | | 92.7 | | | 0.0 | |
| Approach LOS | | B | | | C | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.3 | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | Sum of lost time (s) | | | | | 18.0 | | |
| Intersection Capacity Utilization | | | 105.5% | | ICU Level of Service | | | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 105 | 743 | 226 | 78 | 796 | 44 | 226 | 178 | 40 | 57 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1603 | 3232 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.13 | 1.00 | 1.00 | 0.36 | 1.00 | | 0.54 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 217 | 3061 | 1291 | 600 | 3232 | | 819 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 782 | 238 | 82 | 838 | 46 | 238 | 187 | 42 | 60 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 97 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 111 | 782 | 141 | 82 | 880 | 0 | 238 | 208 | 0 | 60 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.7 | 52.7 | 62.0 | 40.6 | 34.1 | | 29.4 | 20.1 | | 24.2 | 17.5 | |
| Effective Green, g (s) | 62.7 | 52.7 | 62.0 | 40.6 | 34.1 | | 29.4 | 20.1 | | 24.2 | 17.5 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.39 | 0.32 | | 0.28 | 0.19 | | 0.23 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 452 | 1536 | 762 | 294 | 1050 | | 285 | 576 | | 264 | 464 | |
| v/s Ratio Prot | c0.06 | c0.26 | 0.02 | 0.02 | c0.27 | | c0.07 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.09 | | 0.09 | 0.09 | | | c0.16 | | | 0.04 | | |
| v/c Ratio | 0.25 | 0.51 | 0.18 | 0.28 | 0.84 | | 0.84 | 0.36 | | 0.23 | 0.29 | |
| Uniform Delay, d1 | 12.1 | 17.5 | 9.9 | 20.8 | 32.9 | | 34.1 | 36.9 | | 32.3 | 38.3 | |
| Progression Factor | 0.92 | 1.02 | 1.77 | 1.00 | 1.00 | | 0.94 | 0.89 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 0.8 | 0.1 | 0.5 | 8.0 | | 18.0 | 1.3 | | 0.4 | 1.2 | |
| Delay (s) | 12.0 | 18.7 | 17.5 | 21.3 | 40.9 | | 50.2 | 34.1 | | 32.8 | 39.5 | |
| Level of Service | B | B | B | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 17.8 | | | 39.2 | | | 42.3 | | | 38.0 | |
| Approach LOS | | B | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 73.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 329 | 286 | 59 | 196 | 102 | 329 | 382 | 83 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2916 | | 1463 | 3036 | | 1589 | 3237 | | 1549 | 3135 | |
| Flt Permitted | 0.53 | 1.00 | | 0.24 | 1.00 | | 0.46 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 914 | 2916 | | 367 | 3036 | | 772 | 3237 | | 772 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 346 | 301 | 62 | 206 | 107 | 346 | 402 | 87 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 144 | 0 | 0 | 61 | 0 | 0 | 17 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 503 | 0 | 62 | 252 | 0 | 346 | 472 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 359 | 797 | | 200 | 833 | | 530 | 1292 | | 338 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.02 | 0.08 | | c0.11 | 0.15 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.09 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.18 | 0.63 | | 0.31 | 0.30 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 33.5 | | 24.5 | 30.2 | | 16.6 | 22.2 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.06 | 0.93 | |
| Incremental Delay, d2 | 0.3 | 3.8 | | 1.0 | 0.9 | | 3.0 | 0.8 | | 0.5 | 0.9 | |
| Delay (s) | 24.1 | 37.3 | | 25.5 | 31.1 | | 19.6 | 23.0 | | 24.2 | 27.8 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 36.1 | | | 30.2 | | | 21.6 | | | 27.0 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 169 | 716 | 81 | 6 | 457 | 113 | 68 | 602 | 7 | 104 | 326 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.99 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2929 | | | 2896 | | 1436 | 3186 | | 1451 | 2788 | |
| Flt Permitted | | 0.58 | | | 0.94 | | 0.41 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | | 1724 | | | 2728 | | 624 | 3186 | | 421 | 2788 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 796 | 90 | 7 | 508 | 126 | 76 | 669 | 8 | 116 | 362 | 117 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 33 | 0 | 0 | 1 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 1063 | 0 | 0 | 608 | 0 | 76 | 676 | 0 | 116 | 431 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 790 | | | 797 | | 300 | 1078 | | 232 | 944 | |
| v/s Ratio Prot | | c0.08 | | | | | 0.02 | c0.21 | | c0.03 | 0.15 | |
| v/s Ratio Perm | | c0.48 | | | 0.22 | | 0.09 | | | 0.17 | | |
| v/c Ratio | | 1.35 | | | 0.76 | | 0.25 | 0.63 | | 0.50 | 0.46 | |
| Uniform Delay, d1 | | 19.0 | | | 20.9 | | 12.4 | 18.1 | | 13.1 | 16.8 | |
| Progression Factor | | 1.00 | | | 1.52 | | 0.95 | 0.73 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 164.2 | | | 0.6 | | 1.8 | 2.5 | | 7.5 | 1.6 | |
| Delay (s) | | 183.2 | | | 32.5 | | 13.6 | 15.6 | | 20.6 | 18.4 | |
| Level of Service | | F | | | C | | B | B | | C | B | |
| Approach Delay (s) | | 183.2 | | | 32.5 | | | 15.4 | | | 18.8 | |
| Approach LOS | | F | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 78.5 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.97 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 83.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 334 | 48 | 73 | 165 | 13 | 38 | 661 | 101 | 10 | 378 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1916 | | 1618 | 1943 | | 1658 | 3196 | | 1138 | 3197 | |
| Flt Permitted | 0.64 | 1.00 | | 0.39 | 1.00 | | 0.50 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 1126 | 1916 | | 660 | 1943 | | 870 | 3196 | | 354 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 344 | 49 | 75 | 170 | 13 | 39 | 681 | 104 | 10 | 390 | 46 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 19 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 54 | 385 | 0 | 75 | 179 | 0 | 39 | 766 | 0 | 10 | 422 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 416 | 707 | | 244 | 717 | | 415 | 1524 | | 169 | 1525 | |
| v/s Ratio Prot | c0.20 | | | 0.09 | | | c0.24 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.11 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.13 | 0.54 | | 0.31 | 0.25 | | 0.09 | 0.50 | | 0.06 | 0.28 | |
| Uniform Delay, d1 | 13.6 | 16.2 | | 14.6 | 14.2 | | 9.3 | 11.7 | | 9.2 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.74 | 1.78 | | 1.00 | 1.00 | | 0.48 | 0.47 | |
| Incremental Delay, d2 | 0.6 | 3.0 | | 1.1 | 0.3 | | 0.4 | 1.2 | | 0.5 | 0.3 | |
| Delay (s) | 14.2 | 19.2 | | 26.4 | 25.6 | | 9.8 | 12.9 | | 4.9 | 5.2 | |
| Level of Service | B | B | | C | C | | A | B | | A | A | |
| Approach Delay (s) | 18.6 | | | 25.8 | | | 12.7 | | | 5.2 | | |
| Approach LOS | B | | | C | | | B | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 68.9% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|-------|------|------|------|------|------|------|-------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 761 | 200 | 621 | 17 | 3 | 14 | 3 | 47 | 30 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.98 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | | 2954 | | | | 1732 | | | 1908 | | |
| Flt Permitted | 1.00 | | 0.55 | | | | 0.94 | | | 0.79 | | |
| Satd. Flow (perm) | 2956 | | 1640 | | | | 1643 | | | 1562 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 801 | 211 | 654 | 18 | 3 | 15 | 3 | 49 | 32 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 801 | 0 | 881 | 0 | 0 | 0 | 32 | 0 | 0 | 35 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | Perm | | | | Perm | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 803 | | | | 354 | | | 336 | | |
| v/s Ratio Prot | 0.27 | | c0.10 | | | | | | | | | |
| v/s Ratio Perm | | | c0.35 | | | | 0.02 | | | c0.02 | | |
| v/c Ratio | 0.98 | | 1.10 | | | | 0.09 | | | 0.10 | | |
| Uniform Delay, d1 | 23.3 | | 19.0 | | | | 20.4 | | | 20.5 | | |
| Progression Factor | 1.34 | | 0.74 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 5.6 | | 60.5 | | | | 0.5 | | | 0.6 | | |
| Delay (s) | 36.9 | | 74.6 | | | | 20.9 | | | 21.1 | | |
| Level of Service | D | | E | | | | C | | | C | | |
| Approach Delay (s) | 36.9 | | 74.6 | | | | 20.9 | | | 21.1 | | |
| Approach LOS | D | | E | | | | C | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 166.3 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.04 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 106.4% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

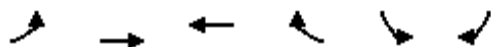


| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 461 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 485 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 486 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.34 | |
| v/s Ratio Perm | | |
| v/c Ratio | 2.21 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 0.78 | |
| Incremental Delay, d2 | 556.9 | |
| Delay (s) | 578.4 | |
| Level of Service | F | |
| Approach Delay (s) | 578.4 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 194 | 1172 | 684 | 81 | 139 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3234 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.65 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2129 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 216 | 1302 | 760 | 90 | 154 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1518 | 836 | 0 | 154 | 45 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1310 | 1972 | | 426 | 381 |
| v/s Ratio Prot | | | 0.26 | | c0.09 | |
| v/s Ratio Perm | | c0.71 | | | | 0.03 |
| v/c Ratio | | 1.16 | 0.42 | | 0.36 | 0.12 |
| Uniform Delay, d1 | | 12.5 | 6.5 | | 19.6 | 18.3 |
| Progression Factor | | 1.45 | 1.27 | | 0.91 | 0.85 |
| Incremental Delay, d2 | | 72.3 | 0.6 | | 2.4 | 0.6 |
| Delay (s) | | 90.5 | 8.9 | | 20.1 | 16.1 |
| Level of Service | | F | A | | C | B |
| Approach Delay (s) | | 90.5 | 8.9 | | 18.0 | |
| Approach LOS | | F | A | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 56.0 | | HCM Level of Service | E |
| HCM Volume to Capacity ratio | | | 0.92 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 81.0% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 53 | 1231 | 703 | 202 | 174 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2920 | | 1464 | 1373 |
| Flt Permitted | | 0.87 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2566 | 2920 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 1296 | 740 | 213 | 183 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 41 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 0 | 1352 | 912 | 0 | 183 | 17 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1500 | 1707 | | 428 | 401 |
| v/s Ratio Prot | | | 0.31 | | c0.12 | |
| v/s Ratio Perm | | c0.53 | | | | 0.01 |
| v/c Ratio | | 0.90 | 0.53 | | 0.43 | 0.04 |
| Uniform Delay, d1 | | 11.9 | 8.2 | | 18.6 | 16.5 |
| Progression Factor | | 0.89 | 0.58 | | 0.95 | 1.39 |
| Incremental Delay, d2 | | 1.0 | 0.6 | | 3.0 | 0.2 |
| Delay (s) | | 11.5 | 5.3 | | 20.8 | 23.1 |
| Level of Service | | B | A | | C | C |
| Approach Delay (s) | | 11.5 | 5.3 | | 21.4 | |
| Approach LOS | | B | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.1 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.74 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 85.1% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 1257 | 160 | 161 | 663 | 423 | 438 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.98 | | 1.00 | 1.00 | 0.93 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.98 | |
| Satd. Flow (prot) | 2248 | | 1770 | 2436 | 1748 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.98 | |
| Satd. Flow (perm) | 2248 | | 240 | 2436 | 1748 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1283 | 163 | 164 | 677 | 432 | 447 |
| RTOR Reduction (vph) | 7 | 0 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 1439 | 0 | 164 | 677 | 861 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1072 | | 114 | 1162 | 645 | |
| v/s Ratio Prot | 0.64 | | | 0.28 | c0.49 | |
| v/s Ratio Perm | | | c0.68 | | | |
| v/c Ratio | 1.34 | | 1.44 | 0.58 | 1.34 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 12.3 | 20.5 | |
| Progression Factor | 1.55 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 157.4 | | 240.0 | 2.1 | 161.3 | |
| Delay (s) | 183.8 | | 257.0 | 14.5 | 181.8 | |
| Level of Service | F | | F | B | F | |
| Approach Delay (s) | 183.8 | | | 61.7 | 181.8 | |
| Approach LOS | F | | | E | F | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 150.8 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.39 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 10.0 |
| Intersection Capacity Utilization | | 138.1% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 725 | 89 | 258 | 1516 | 9 | 72 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.70 | |
| Satd. Flow (perm) | 285 | 3213 | 1422 | 435 | 3138 | 1366 | | 1309 | 1443 | | 719 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 806 | 99 | 287 | 1684 | 10 | 80 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 48 | 0 | 0 | 2 | 0 | 0 | 182 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 806 | 51 | 287 | 1684 | 8 | 0 | 80 | 26 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 43.7 | 43.7 | 43.7 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Effective Green, g (s) | 43.7 | 43.7 | 43.7 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 147 | 1652 | 731 | 607 | 2451 | 1067 | | 163 | 180 | | 90 | |
| v/s Ratio Prot | | 0.25 | | 0.11 | c0.54 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.26 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.01 | 0.49 | 0.07 | 0.47 | 0.69 | 0.01 | | 0.49 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 10.1 | 13.4 | 10.4 | 4.1 | 4.4 | 2.0 | | 34.7 | 33.2 | | 32.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.1 | 1.0 | 0.2 | 0.6 | 0.8 | 0.0 | | 2.3 | 0.4 | | 0.0 | |
| Delay (s) | 10.2 | 14.4 | 10.6 | 4.7 | 5.2 | 2.1 | | 37.0 | 33.5 | | 32.7 | |
| Level of Service | B | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 14.0 | | | 5.1 | | | 34.5 | | | 32.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 7.0 | | | |
| Intersection Capacity Utilization | | | 62.6% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 819 | 851 | 45 | 24 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1482 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2834 | 3017 | | 1482 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 910 | 946 | 50 | 27 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 924 | 992 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1039 | 2145 | | 115 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.8 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.3 | 0.2 | | 4.9 | |
| Delay (s) | | 38.1 | 0.3 | | 44.0 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 38.1 | 0.3 | | 44.0 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 44.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 90 | 430 | 1 | 27 | 568 | 80 | 0 | 0 | 1 | 45 | 3 | 136 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1726 | | | 3232 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.76 | | | 0.89 | | | 1.00 | | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1331 | | | 2895 | | | 1432 | | | 1569 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 478 | 1 | 30 | 631 | 89 | 0 | 0 | 1 | 50 | 3 | 151 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 101 |
| Lane Group Flow (vph) | 0 | 579 | 0 | 0 | 738 | 0 | 0 | 0 | 0 | 0 | 53 | 50 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | custom | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | 3 | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 49.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 49.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.58 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 485 | | | 1669 | | | 152 | | | 469 | 422 |
| v/s Ratio Prot | | | | | | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | c0.43 | | | c0.25 | | | | | | 0.01 | c0.04 |
| v/c Ratio | | 1.19 | | | 0.44 | | | 0.00 | | | 0.11 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 10.2 | | | 34.0 | | | 21.9 | 19.9 |
| Progression Factor | | 1.00 | | | 0.22 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 106.0 | | | 0.1 | | | 0.0 | | | 0.5 | 0.6 |
| Delay (s) | | 133.0 | | | 2.3 | | | 34.0 | | | 22.4 | 20.5 |
| Level of Service | | F | | | A | | | C | | | C | C |
| Approach Delay (s) | | 133.0 | | | 2.3 | | | 34.0 | | | 21.0 | |
| Approach LOS | | F | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 54.2 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 73.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 93 | 0 | 0 | 122 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.2 | 19.1 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.6 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 41 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 43 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 24 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.08 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.1 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.33 | 0.75 | 1.24 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.6 | | 5.1 | 12.2 | 16.6 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.2 | | 0.0 | | | | 55.2 | |
| Approach LOS | | D | | | B | | A | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|--------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↰↱ | ↰↱ | | ↰ | ↰↱ | ↰ | | ↰↱ | ↰ | ↰ | | ↰ |
| Volume (vph) | 340 | 815 | 220 | 54 | 578 | 287 | 102 | 251 | 55 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 608 | 302 | 107 | 264 | 58 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 228 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1072 | 0 | 57 | 608 | 74 | 0 | 371 | 16 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.63 | | 0.54 | 0.79 | 0.30 | | 0.52 | 0.06 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 22.0 | | 59.2 | 45.8 | 39.8 | | 45.1 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.95 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.7 | 8.0 | 3.0 | | 2.7 | 0.4 | 49.7 | | 0.4 |
| Delay (s) | 30.7 | 4.7 | | 77.9 | 53.8 | 42.8 | | 45.3 | 40.6 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 51.8 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 893 | 166 | 105 | 839 | 0 | 74 | 0 | 87 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 299 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 184 | 117 | 932 | 0 | 82 | 0 | 97 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1161 | 0 | 117 | 932 | 0 | 82 | 0 | 31 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 179 | 1889 | | 346 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | c0.39 | | | c0.08 | | 0.02 | | 0.01 | |
| v/c Ratio | | 0.65 | | 0.65 | 0.49 | | 0.24 | | 0.07 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 13.1 | | 13.2 | 11.4 | | 25.0 | | 23.6 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.8 | | 17.1 | 0.9 | | 1.6 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 14.9 | | 30.3 | 12.3 | | 26.6 | | 23.9 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.9 | | | 14.3 | | | 25.2 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  |  | |  |  |
| Volume (vph) | 0 | 0 | 0 | 301 | 0 | 1230 | 215 | 686 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.6 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.11 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.8 | | 848.6 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 40.4 | | 886.1 | 21.8 | 18.4 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 719.9 | | | 19.2 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 326.5 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 102.1% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 145 | 0 | 0 | 0 | 0 | 579 | 410 | 359 | 734 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 149 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 962 | 0 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.14 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.51 | 0.71 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.5 | | | | | | 32.7 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.2 | | | | | | 1.4 | 6.1 | 4.8 | 0.1 | |
| Delay (s) | 35.5 | 51.7 | | | | | | 38.5 | 45.6 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 47.9 | | | 0.0 | | | 41.5 | | | 12.8 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 102.1% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | |  |  | |  |  | | |  | | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 164 | 0 | 0 | 149 | 5 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 974 | 1846 | | | 1955 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 182 | 0 | 0 | 166 | 6 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 182 | 0 | 0 | 171 | 0 | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% | |
| Turn Type | | | | Perm | | | pm+pt | | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 40.0 |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 46.0 |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.54 |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 |
| Lane Grp Cap (vph) | | | | 536 | | | 995 | | | 634 | | | 1058 |
| v/s Ratio Prot | | | | | | | 0.01 | | | 0.00 | | | 0.09 |
| v/s Ratio Perm | | | | c0.19 | | | | | | 0.01 | | | |
| v/c Ratio | | | | 0.60 | | | 0.04 | | | 0.02 | | | 0.16 |
| Uniform Delay, d1 | | | | 24.5 | | | 20.0 | | | 10.5 | | | 9.8 |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.04 | | | 1.00 |
| Incremental Delay, d2 | | | | 4.9 | | | 0.1 | | | 0.1 | | | 0.3 |
| Delay (s) | | | | 29.4 | | | 20.1 | | | 11.0 | | | 10.1 |
| Level of Service | | | | C | | | C | | | B | | | B |
| Approach Delay (s) | 0.0 | | | | | | 28.0 | | | 9.8 | | | 10.1 |
| Approach LOS | A | | | | | | C | | | A | | | B |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 6 | 0 | 14 | 0 | 149 | 45 | 46 | 393 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1571 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 1515 | 1735 | | | 1529 | | | 1718 | | 987 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 6 | 0 | 15 | 0 | 157 | 47 | 48 | 414 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 11 | 0 | 0 | 191 | 0 | 48 | 414 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 4 | | 8 | | 2 | | 1 | | 6 | | | |
| Permitted Phases | 4 | | 8 | | 6 | | | | | | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 481 | 551 | | | 486 | | | 808 | | 630 | 1094 | |
| v/s Ratio Prot | c0.01 | | | | 0.11 | | 0.01 | | c0.22 | | | |
| v/s Ratio Perm | 0.01 | | 0.01 | | 0.04 | | | | | | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.24 | | 0.08 | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.4 | | 8.8 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.98 | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.7 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.1 | | 8.8 | 9.0 | |
| Level of Service | C | C | | | C | | | B | | A | A | |
| Approach Delay (s) | 20.1 | | 20.0 | | 14.1 | | 9.0 | | | | | |
| Approach LOS | C | | C | | B | | A | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 41.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | W | | W | W | W | |
| Volume (vph) | 48 | 42 | 12 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1752 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1752 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 47 | 13 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 0 | 13 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.51 | 0.63 | 1.43 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.4 | 5.1 | 12.7 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 5.0 | 12.7 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | | |  | |  |  | | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 130 | 2 | 0 | 283 | 17 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 | |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 | |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frbp, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 | |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1677 | | | 1738 | 1428 | |
| Flt Permitted | | | | | 1.00 | | 0.47 | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | | | | | 3772 | | 844 | 1677 | | | 1738 | 1428 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 144 | 2 | 0 | 314 | 19 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 146 | 0 | 0 | 314 | 8 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% | |
| Turn Type | | | | Split | | pm+pt | | | | | | Perm | |
| Protected Phases | | | | 8 | | 8 | | 7 | | 2 | | 6 | |
| Permitted Phases | | | | | | | | 2 | | | | 6 | |
| Actuated Green, G (s) | | | | 26.0 | | 26.0 | | 51.0 | | 51.0 | | 38.0 | |
| Effective Green, g (s) | | | | 26.0 | | 26.0 | | 51.0 | | 51.0 | | 38.0 | |
| Actuated g/C Ratio | | | | 0.31 | | 0.31 | | 0.60 | | 0.60 | | 0.45 | |
| Clearance Time (s) | | | | 4.0 | | 4.0 | | 4.0 | | 4.0 | | 3.0 | |
| Lane Grp Cap (vph) | | | | 1154 | | 1154 | | 606 | | 1006 | | 777 | |
| v/s Ratio Prot | | | | c0.09 | | c0.09 | | c0.06 | | 0.09 | | 0.18 | |
| v/s Ratio Perm | | | | | | | | c0.23 | | | | 0.01 | |
| v/c Ratio | | | | 0.29 | | 0.29 | | 0.47 | | 0.14 | | 0.40 | |
| Uniform Delay, d1 | | | | 22.5 | | 22.5 | | 13.7 | | 7.4 | | 15.9 | |
| Progression Factor | | | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | | | 0.6 | | 0.6 | | 2.6 | | 0.3 | | 1.6 | |
| Delay (s) | | | | 23.1 | | 23.1 | | 16.4 | | 7.7 | | 17.4 | |
| Level of Service | | | | C | | C | | B | | A | | B | |
| Approach Delay (s) | 0.0 | | | 23.1 | | 23.1 | | 13.5 | | 13.5 | | 17.2 | |
| Approach LOS | A | | | C | | C | | B | | B | | B | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | HCM Level of Service | | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 54.1% | | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↔ | ↕ | | ↔ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 207 | 32 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3282 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3282 | | 1056 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 230 | 36 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 16 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 250 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1488 | | 638 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 277 | 24 | 159 | 590 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3173 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 599 | 3173 | | 1004 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 292 | 25 | 167 | 621 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 309 | 0 | 167 | 666 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 562 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013

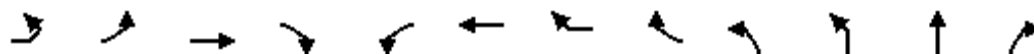


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 253 | 588 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 281 | 653 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 168 | 187 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.8 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.31 | 0.33 | 0.71 | 0.48 | |
| Capacity (veh/h) | 591 | 528 | 546 | 602 | 622 | |
| Control Delay (s) | 12.6 | 11.2 | 11.2 | 20.8 | 12.7 | |
| Approach Delay (s) | 12.6 | 11.2 | | 17.4 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 54.0% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013



| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
|------------------------|------|-------|-------|------|------|-------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 32 | 35 | 376 | 18 | 22 | 409 | 76 | 78 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3251 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 932 | 1731 | 1421 | | | 257 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 418 | 20 | 24 | 454 | 84 | 87 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 36 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 418 | 8 | 24 | 454 | 135 | 0 | 0 | 137 | 422 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 222 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.26 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.03 | | 0.10 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.58 | 0.01 | 0.11 | 1.10 | 0.40 | | | 1.99 | 0.49 | |
| Uniform Delay, d1 | | 21.6 | 23.4 | 17.8 | 31.3 | 40.0 | 33.7 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.3 | 0.0 | 1.0 | 74.8 | 3.5 | | | 491.0 | 2.0 | |
| Delay (s) | | 23.5 | 26.7 | 17.9 | 32.3 | 114.8 | 37.2 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.9 | | | 91.3 | | | | | 154.2 | |
| Approach LOS | | | C | | | F | | | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 147.2 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.44 | | |
| Actuated Cycle Length (s) | 105.0 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 103.9% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 108 | 571 | 82 | 103 | 4 | 114 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.37 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 670 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 120 | 634 | 91 | 114 | 4 | 127 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 120 | 827 | 0 | 0 | 0 | 131 | 867 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 175 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.08 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.33 | |
| v/c Ratio | 0.69 | 0.97 | | | | 0.39 | 1.69 | |
| Uniform Delay, d1 | 34.9 | 38.4 | | | | 36.8 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 19.7 | 25.0 | | | | 3.4 | 317.6 | |
| Delay (s) | 54.6 | 63.4 | | | | 40.3 | 359.9 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 62.3 | | | | 319.0 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 601 | 0 | 0 | 493 | 60 | 85 | 52 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1951 | | | 1840 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1524 | | | 1951 | | | 1840 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 668 | 0 | 0 | 548 | 67 | 94 | 58 | 22 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 740 | 0 | 0 | 615 | 0 | 0 | 174 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 938 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.32 | | | | | | | |
| v/s Ratio Perm | | 0.49 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.79 | | | 0.51 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.3 | | | 7.0 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.7 | | | 1.6 | | | 2.1 | | | | |
| Delay (s) | | 16.0 | | | 8.6 | | | 21.7 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 16.0 | | | 8.6 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 87.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 340 | 152 | 129 | 358 | 157 | 105 | 639 | 85 | 144 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1982 | 1434 | | 1947 | 1444 | 1546 | 3040 | 1296 | 1506 | 3069 | 1252 |
| Flt Permitted | | 0.30 | 1.00 | | 0.70 | 1.00 | 0.23 | 1.00 | 1.00 | 0.29 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 598 | 1434 | | 1378 | 1444 | 373 | 3040 | 1296 | 455 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 358 | 160 | 136 | 377 | 165 | 111 | 673 | 89 | 152 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 94 | 0 | 0 | 118 | 0 | 0 | 53 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 433 | 66 | 0 | 513 | 47 | 111 | 673 | 36 | 152 | 799 | 50 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 377 | 587 | | 394 | 413 | 272 | 1225 | 522 | 310 | 1248 | 509 |
| v/s Ratio Prot | | c0.11 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.36 | 0.05 | | c0.37 | 0.03 | 0.16 | | 0.03 | 0.20 | | 0.04 |
| v/c Ratio | | 1.15 | 0.11 | | 1.30 | 0.11 | 0.41 | 0.55 | 0.07 | 0.49 | 0.64 | 0.10 |
| Uniform Delay, d1 | | 31.0 | 19.2 | | 37.5 | 27.7 | 16.4 | 24.0 | 19.3 | 16.1 | 25.0 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.75 | 1.55 | 2.62 |
| Incremental Delay, d2 | | 93.3 | 0.4 | | 153.4 | 0.6 | 1.0 | 1.8 | 0.3 | 1.2 | 2.4 | 0.4 |
| Delay (s) | | 124.3 | 19.6 | | 190.9 | 28.2 | 17.4 | 25.8 | 19.5 | 29.4 | 41.1 | 50.9 |
| Level of Service | | F | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 96.0 | | | 151.3 | | | 24.1 | | | 40.3 | |
| Approach LOS | | F | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 69.8 | | | | HCM Level of Service | | | E | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 92.1% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 421 | 85 | 98 | 539 | 94 | 51 | 61 | 71 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1649 | | | 1797 | | | | |
| Flt Permitted | | 0.83 | | | 0.85 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1367 | | | 1417 | | | 1797 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 468 | 94 | 109 | 599 | 104 | 57 | 68 | 79 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 8 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 647 | 0 | 0 | 804 | 0 | 0 | 169 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 841 | | | 872 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | 0.57 | | | 0.09 | | | | |
| v/c Ratio | | 0.77 | | | 0.92 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.1 | | | 11.1 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.7 | | | 16.6 | | | 2.1 | | | | |
| Delay (s) | | 15.8 | | | 27.7 | | | 21.7 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 15.8 | | | 27.7 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 53 | 496 | 83 | 76 | 527 | 37 | 38 | 76 | 72 | 54 | 238 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1685 | 1382 | | 1713 | 1417 | | 1686 | 1455 | | 1878 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.84 | 1.00 | | 0.82 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1504 | 1382 | | 1442 | 1417 | | 1412 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 522 | 87 | 80 | 555 | 39 | 40 | 80 | 76 | 57 | 251 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 578 | 50 | 0 | 635 | 27 | 0 | 120 | 24 | 0 | 357 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 862 | 792 | | 827 | 812 | | 452 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.38 | 0.04 | | 0.44 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.67 | 0.06 | | 0.77 | 0.03 | | 0.27 | 0.05 | | 0.63 | |
| Uniform Delay, d1 | | 11.1 | 7.1 | | 12.2 | 7.0 | | 18.9 | 17.6 | | 21.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 4.1 | 0.2 | | 6.8 | 0.1 | | 1.4 | 0.2 | | 5.2 | |
| Delay (s) | | 15.2 | 7.2 | | 19.0 | 7.0 | | 20.4 | 17.8 | | 26.9 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 14.2 | | | 18.3 | | | 19.4 | | | 26.9 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.72 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 101.5% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 494 | 34 | 45 | 539 | 54 | 45 | 165 | 55 | 123 | 210 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1533 | 3066 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.35 | 1.00 | | 0.39 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 562 | 3066 | | 675 | 3730 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 549 | 38 | 50 | 599 | 60 | 50 | 183 | 61 | 137 | 233 | 37 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 66 | 579 | 0 | 50 | 647 | 0 | 50 | 183 | 24 | 137 | 233 | 15 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 268 | 1462 | | 322 | 1779 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.19 | | | 0.17 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.07 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.25 | 0.40 | | 0.16 | 0.36 | | 0.13 | 0.28 | 0.04 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.1 | 11.0 | | 9.6 | 10.8 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.85 | 0.90 | 0.76 | 0.59 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.2 | 0.8 | | 1.0 | 0.6 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.3 | 11.8 | | 10.6 | 11.3 | | 11.2 | 12.9 | 9.2 | 9.9 | 9.4 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.8 | | | 11.3 | | | 11.8 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 421 | 81 | 73 | 396 | 67 | 57 | 180 | 64 | 89 | 245 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3137 | | 1520 | 3128 | | 1580 | 2919 | | 1452 | 2997 | |
| Flt Permitted | 0.44 | 1.00 | | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 617 | 3137 | | 667 | 3128 | | 882 | 2919 | | 907 | 2997 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 443 | 85 | 77 | 417 | 71 | 60 | 189 | 67 | 94 | 258 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 528 | 0 | 77 | 488 | 0 | 60 | 217 | 0 | 94 | 300 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 296 | 1506 | | 320 | 1501 | | 365 | 1207 | | 375 | 1239 | |
| v/s Ratio Prot | c0.17 | | | 0.16 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.12 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.35 | | 0.24 | 0.33 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.3 | 12.2 | | 11.5 | 12.0 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 1.8 | 0.6 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.9 | 12.8 | | 13.2 | 12.6 | | 14.8 | 14.3 | | 16.0 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.7 | | | 14.4 | | | 15.1 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 52.1% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

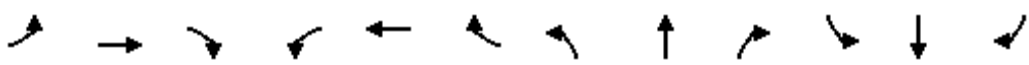
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 100 | 447 | 62 | 32 | 523 | 48 | 86 | 203 | 60 | 76 | 473 | 110 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1653 | | 1371 | 1973 | | 1534 | 2998 | | 1535 | 3012 | |
| Flt Permitted | 0.24 | 1.00 | | 0.30 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 402 | 1653 | | 435 | 1973 | | 451 | 2998 | | 939 | 3012 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 105 | 471 | 65 | 34 | 551 | 51 | 91 | 214 | 63 | 80 | 498 | 116 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 105 | 536 | 0 | 34 | 602 | 0 | 91 | 277 | 0 | 80 | 614 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 272 | 725 | | 241 | 829 | | 204 | 698 | | 329 | 702 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.31 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.18 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.39 | 0.74 | | 0.14 | 0.73 | | 0.45 | 0.40 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 23.8 | 19.8 | | 20.5 | 20.6 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 6.7 | | 0.3 | 5.5 | | 1.6 | 1.7 | | 0.4 | 14.3 | |
| Delay (s) | 24.7 | 26.5 | | 20.8 | 26.1 | | 30.8 | 29.2 | | 22.2 | 45.7 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 26.2 | | | 25.8 | | | 29.6 | | | 43.0 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue

1/14/2013




















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 77 | 399 | 65 | 117 | 510 | 118 | 67 | 158 | 58 | 127 | 367 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3131 | | 1652 | 3237 | | 1549 | 3027 | |
| Flt Permitted | | 0.71 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2616 | | | 2271 | | 737 | 3237 | | 983 | 3027 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 86 | 443 | 72 | 130 | 567 | 131 | 74 | 176 | 64 | 141 | 408 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 601 | 0 | 0 | 828 | 0 | 74 | 240 | 0 | 141 | 499 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1186 | | | 1030 | | 324 | 1424 | | 433 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.23 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.51 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.37 | |
| Uniform Delay, d1 | | 14.5 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 6.7 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 16.1 | | | 24.3 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 16.1 | | | 24.3 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.4% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 877 | 6 | 20 | 585 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 647 | 3206 | | 432 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 974 | 7 | 22 | 650 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 981 | 0 | 22 | 650 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 405 | 2008 | | 271 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | c0.31 | | | 0.20 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.9 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.3 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | 8.2 | | | 6.6 | | | | 20.0 | | | 24.0 | |
| Approach LOS | A | | | A | | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.46 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 73.6 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

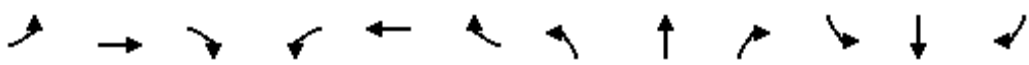
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 124 | 94 | 163 | 56 | 144 | 907 | 90 | 125 | 825 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1505 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.21 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1505 | | 340 | 1585 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 131 | 99 | 172 | 59 | 152 | 955 | 95 | 132 | 868 | 109 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 138 | 348 | 0 | 99 | 216 | 0 | 152 | 955 | 55 | 132 | 868 | 58 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 285 | 390 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.26 | | 0.04 | 0.25 | | 0.04 |
| v/c Ratio | 0.48 | 0.89 | | 0.52 | 0.53 | | 0.66 | 0.76 | 0.10 | 0.62 | 0.68 | 0.11 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.0 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.82 | 0.53 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.2 | | 9.9 | 4.8 | | 12.2 | 3.8 | 0.3 | 12.8 | 2.9 | 0.4 |
| Delay (s) | 28.4 | 55.5 | | 32.7 | 31.8 | | 22.0 | 21.3 | 8.5 | 27.8 | 23.4 | 15.8 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.2 | | | 32.1 | | | 20.4 | | | 23.1 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 35 | 20 | 173 | 21 | 25 | 149 | 40 | 47 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1839 | | | 1849 | | | 1939 | | | 1974 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | | 1783 | | | 1791 | | | 1837 | | | 1868 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 36 | 21 | 178 | 22 | 26 | 154 | 41 | 48 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 237 | 0 | 0 | 215 | 0 | 0 | 209 | 0 | 0 | 354 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 741 | | | 744 | | | 848 | | | 862 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.25 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.6 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.70 | | | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 13.9 | | | 9.8 | | | 13.2 | | | 13.1 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 13.9 | | | 9.8 | | | 13.2 | | | 13.1 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 53.1% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 38 | 25 | 180 | 19 | 49 | 200 | 31 | 43 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3059 | | 1576 | 3119 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3059 | | 985 | 3119 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 42 | 28 | 200 | 21 | 54 | 222 | 34 | 48 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 54 | 242 | 0 | 48 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 912 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.95 | 0.97 | | 0.75 | 0.74 | | 1.36 | 1.36 | | 0.38 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.5 | 17.7 | | 13.2 | 13.5 | | 8.4 | 8.4 | | 2.5 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.6 | | | 13.5 | | | 8.4 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.0 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.18 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 41 | 25 | 159 | 38 | 27 | 247 | 16 | 40 | 322 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3058 | | 1525 | 2937 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3058 | | 974 | 2937 | | | 1823 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 46 | 28 | 177 | 42 | 30 | 274 | 18 | 44 | 358 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 205 | 0 | 28 | 194 | 0 | 0 | 319 | 0 | 0 | 434 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1223 | | 390 | 1175 | | | 869 | | | 878 | |
| v/s Ratio Prot | 0.07 | | | 0.07 | | | 0.17 | | | 0.24 | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.17 | | | c0.24 | | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.37 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.05 | 1.00 | | 0.77 | 0.76 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.3 | 12.8 | | 9.6 | 9.8 | | | 11.9 | | | 13.6 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 13.2 | | | 9.8 | | | 11.9 | | | 13.6 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 57.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 20 | 161 | 27 | 41 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1970 | | 1087 | 1975 | | | 1792 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 22 | 179 | 30 | 46 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 22 | 209 | 0 | 0 | 319 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 606 | | 334 | 608 | | | 1020 | | | 1088 | |
| v/s Ratio Prot | 0.08 | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.07 | 0.34 | | | 0.31 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.83 | 0.81 | | 0.92 | 0.93 | | | 0.97 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.8 | 14.6 | | 15.1 | 17.7 | | | 7.9 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 14.7 | | | 17.5 | | | 7.9 | | | 9.6 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.39 | 2.73 | | 1.00 | 1.00 | | 0.82 | 0.77 | 0.97 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.6 | 48.1 | | 17.1 | 17.1 | | 5.5 | 5.3 | 5.1 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.7 | | | 17.1 | | | 5.3 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 253 | 163 | 178 | 204 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 187 | 215 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 187 | 215 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.11 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.33 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.5 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.20 | 2.13 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.4 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 31.0 | 23.8 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 27.1 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 305 | 113 | 77 | 539 | 233 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 632 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 321 | 119 | 81 | 567 | 245 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 168 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 403 | 0 | 81 | 567 | 77 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 703 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.55 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.3 | 8.0 | | | 33.0 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 3.0 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 4.9 | 3.6 | | | 36.0 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 36.0 | | | 73.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 514 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 11 | 434 | 285 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3098 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3098 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 535 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 297 |
| RTOR Reduction (vph) | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 196 |
| Lane Group Flow (vph) | 0 | 866 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 101 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.78 | | 0.22 | 0.29 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 28.4 | | 14.4 | 10.6 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.3 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 33.8 | | 15.5 | 12.9 | | | | | 22.0 | 26.6 | 24.2 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.8 | | | 13.2 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 92.5% | | | ICU Level of Service | | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

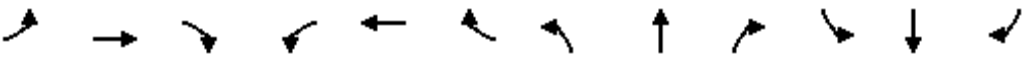
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 419 | 106 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2290 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 432 | 109 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 216 | 325 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1463 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.1 | 3.6 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.8 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 92.5% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 220 | 103 | 153 | 273 | 121 | 84 | 699 | 87 | 102 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2940 | | | 2929 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.72 | | | 0.72 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2137 | | | 2152 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 229 | 107 | 159 | 284 | 126 | 88 | 728 | 91 | 106 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 31 | 0 | 0 | 0 | 56 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 377 | 0 | 0 | 538 | 0 | 88 | 728 | 35 | 106 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 962 | | | 709 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.14 | | | c0.25 | | 0.20 | | 0.03 | 0.18 | | 0.03 |
| v/c Ratio | | 0.39 | | | 0.76 | | 0.53 | 0.60 | 0.07 | 0.48 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.9 | | | 25.5 | | 16.7 | 20.5 | 16.3 | 16.0 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.36 | 0.69 | 0.62 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.2 | | | 7.5 | | 10.7 | 2.1 | 0.2 | 5.2 | 3.1 | 0.2 |
| Delay (s) | | 18.1 | | | 33.0 | | 33.5 | 16.2 | 10.4 | 22.9 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 18.1 | | | 33.0 | | | 17.3 | | | 28.4 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 74.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 327 | 0 | 0 | 424 | 88 | 53 | 44 | 34 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1707 | | | 1653 | | | | |
| Flt Permitted | | 0.83 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1453 | | | 1707 | | | 1653 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 363 | 0 | 0 | 471 | 98 | 59 | 49 | 38 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 447 | 0 | 0 | 557 | 0 | 0 | 126 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 849 | | | 998 | | | 483 | | | | |
| v/s Ratio Prot | | | | | c0.33 | | | | | | | |
| v/s Ratio Perm | | 0.31 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.53 | | | 0.56 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.1 | | | 8.3 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.76 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.3 | | | 2.0 | | | 1.3 | | | | |
| Delay (s) | | 10.4 | | | 8.3 | | | 18.9 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.4 | | | 8.3 | | | 18.9 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 21 | 384 | 39 | 39 | 370 | 50 | 31 | 118 | 39 | 53 | 150 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1955 | | | 1941 | | | 2969 | | | 2985 | |
| Flt Permitted | | 0.97 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1900 | | | 1825 | | | 2647 | | | 2591 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 23 | 427 | 43 | 43 | 411 | 56 | 34 | 131 | 43 | 59 | 167 | 48 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 0 | 488 | 0 | 0 | 503 | 0 | 0 | 183 | 0 | 0 | 247 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 877 | | | 842 | | | 1100 | | | 1076 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.28 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.56 | | | 0.60 | | | 0.17 | | | 0.23 | |
| Uniform Delay, d1 | | 12.7 | | | 13.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.61 | | | 0.40 | | | 1.08 | | | 0.43 | |
| Incremental Delay, d2 | | 2.4 | | | 2.8 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 10.1 | | | 8.0 | | | 13.2 | | | 5.8 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 10.1 | | | 8.0 | | | 13.2 | | | 5.8 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 9.0 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.42 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 75.8% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 330 | 49 | 81 | 467 | 86 | 45 | 219 | 98 | 83 | 227 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1510 | 3036 | | 1573 | 3077 | | 1587 | 2962 | | 1585 | 3072 | |
| Flt Permitted | 0.32 | 1.00 | | 0.46 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 502 | 3036 | | 760 | 3077 | | 929 | 2962 | | 903 | 3072 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 367 | 54 | 90 | 519 | 96 | 50 | 243 | 109 | 92 | 252 | 71 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 23 | 0 | 0 | 50 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 57 | 403 | 0 | 90 | 592 | 0 | 50 | 302 | 0 | 92 | 290 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 170 | 1028 | | 257 | 1041 | | 500 | 1595 | | 486 | 1654 | |
| v/s Ratio Prot | | 0.13 | | | c0.19 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.05 | | | c0.10 | | |
| v/c Ratio | 0.34 | 0.39 | | 0.35 | 0.57 | | 0.10 | 0.19 | | 0.19 | 0.18 | |
| Uniform Delay, d1 | 16.0 | 16.4 | | 16.1 | 17.6 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.70 | 0.67 | | 0.93 | 0.93 | | 0.95 | 0.97 | | 1.08 | 1.08 | |
| Incremental Delay, d2 | 4.6 | 1.0 | | 3.7 | 2.2 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 15.9 | 12.0 | | 18.7 | 18.5 | | 7.3 | 7.7 | | 9.2 | 8.5 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.5 | | | 18.5 | | | 7.7 | | | 8.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.9 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.34 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 348 | 78 | 87 | 418 | 50 | 46 | 231 | 58 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1509 | 3018 | | 1430 | 3723 | | | 3485 | | | 3521 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 708 | 3018 | | 715 | 3723 | | | 3028 | | | 3119 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 366 | 82 | 92 | 440 | 53 | 48 | 243 | 61 | 48 | 294 | 67 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 14 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 419 | 0 | 92 | 479 | 0 | 0 | 325 | 0 | 0 | 384 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 338 | 1439 | | 341 | 1776 | | | 1211 | | | 1248 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | 0.11 | | | c0.12 | | |
| v/s Ratio Perm | 0.09 | | | 0.13 | | | | 0.11 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.29 | | 0.27 | 0.27 | | | 0.27 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.2 | 10.2 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.61 | 1.75 | | 1.09 | 1.09 | | | 0.69 | | | 0.73 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.7 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.8 | 18.6 | | 12.9 | 11.4 | | | 9.5 | | | 10.4 | |
| Level of Service | B | B | | B | B | | | A | | | B | |
| Approach Delay (s) | 18.4 | | | 11.6 | | | 9.5 | | | 10.4 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 58.4% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 294 | 92 | 92 | 293 | 92 | 120 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3087 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.79 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1336 | 1436 | | 2454 | | | 1303 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 327 | 102 | 102 | 326 | 102 | 133 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 423 | 53 | 0 | 498 | 0 | 0 | 263 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 699 | 751 | | 1284 | | | 421 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | 0.04 | | 0.20 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.61 | 0.07 | | 0.39 | | | 0.63 | | | 0.41 | |
| Uniform Delay, d1 | | 10.8 | 7.7 | | 9.3 | | | 18.7 | | | 17.2 | |
| Progression Factor | | 1.86 | 4.76 | | 0.51 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 0.2 | | 0.9 | | | 6.8 | | | 2.3 | |
| Delay (s) | | 23.9 | 36.7 | | 5.6 | | | 25.5 | | | 19.5 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 26.4 | | | 5.6 | | | 25.5 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 79.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 281 | 28 | 26 | 327 | 60 | 26 | 133 | 47 | 62 | 146 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1444 | 3026 | | 1566 | 3019 | | | 3582 | | | 3599 | |
| Flt Permitted | 0.48 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 736 | 3026 | | 899 | 3019 | | | 3238 | | | 3069 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 312 | 31 | 29 | 363 | 67 | 29 | 148 | 52 | 69 | 162 | 70 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 332 | 0 | 29 | 407 | 0 | 0 | 199 | 0 | 0 | 260 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 340 | 1397 | | 415 | 1393 | | | 1345 | | | 1275 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.18 | 0.24 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.6 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.67 | 0.68 | | 0.86 | 0.69 | | | 0.95 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.1 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.8 | 7.5 | | 8.5 | 7.8 | | | 11.4 | | | 5.3 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.5 | | | 7.8 | | | 11.4 | | | 5.3 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.8 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 450 | 26 | 86 | 507 | 222 | 24 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3281 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.76 | | | 0.79 | | | 0.90 | | | 0.70 | |
| Satd. Flow (perm) | | 2509 | | | 2518 | | | 2805 | | | 2289 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 500 | 29 | 96 | 563 | 247 | 27 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 60 | 0 | 0 | 69 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 575 | 0 | 0 | 846 | 0 | 0 | 224 | 0 | 0 | 743 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 965 | | | 968 | | | 1338 | | | 599 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.34 | | | 0.05 | | | c0.32 | |
| v/c Ratio | | 0.60 | | | 0.87 | | | 0.17 | | | 1.36dl | |
| Uniform Delay, d1 | | 16.0 | | | 18.5 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.48 | | | 1.00 | | | 1.00 | | | 0.80 | |
| Incremental Delay, d2 | | 2.7 | | | 10.9 | | | 0.3 | | | 121.3 | |
| Delay (s) | | 26.4 | | | 29.4 | | | 10.5 | | | 140.5 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 26.4 | | | 29.4 | | | 10.5 | | | 140.5 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.7 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 86.1% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 899 | 132 | 48 | 794 | 0 | 82 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3039 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3039 | | | 2485 | | | 1328 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 999 | 147 | 53 | 882 | 0 | 91 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1130 | 0 | 0 | 935 | 0 | 0 | 114 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 5 6 11 | | | 8 | | | 2 | | | 2 | |
| Permitted Phases | | 4 6 11 | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | | 65.0 | | | 33.0 | | | 16.0 | | | | |
| Effective Green, g (s) | | 58.0 | | | 33.0 | | | 16.0 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.37 | | | 0.18 | | | | |
| Clearance Time (s) | | | | | 5.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | | 1958 | | | 911 | | | 236 | | | | |
| v/s Ratio Prot | | c0.37 | | | | | | | | | | |
| v/s Ratio Perm | | | | | c0.38 | | | c0.09 | | | | |
| v/c Ratio | | 0.58 | | | 1.03 | | | 0.48 | | | | |
| Uniform Delay, d1 | | 9.1 | | | 28.5 | | | 33.3 | | | | |
| Progression Factor | | 0.16 | | | 1.43 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.3 | | | 35.5 | | | 6.9 | | | | |
| Delay (s) | | 1.7 | | | 76.4 | | | 40.2 | | | | |
| Level of Service | | A | | | E | | | D | | | | |
| Approach Delay (s) | | 1.7 | | | 76.4 | | | 40.2 | | | 0.0 | |
| Approach LOS | | A | | | E | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | |
| Intersection Capacity Utilization | | | 74.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 224 | 642 | 24 | 112 | 614 | 185 | 61 | 4 | 107 | 212 | 10 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 471 | 3192 | | 583 | 3320 | 1485 | | 1592 | | 763 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 249 | 713 | 27 | 124 | 682 | 206 | 68 | 4 | 119 | 236 | 11 | 237 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 96 | 0 | 90 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 249 | 738 | 0 | 124 | 682 | 110 | 0 | 101 | 0 | 236 | 11 | 102 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+ov | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Effective Green, g (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.42 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 452 | 1507 | | 421 | 1409 | 795 | | 214 | | 312 | 487 | 640 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.47 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.3 | | 10.9 | 18.8 | 10.5 | | 36.0 | | 28.6 | 23.5 | 15.6 |
| Progression Factor | 2.63 | 1.86 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.0 | 0.0 | 0.2 |
| Delay (s) | 25.9 | 31.3 | | 11.4 | 20.0 | 10.6 | | 38.2 | | 38.6 | 23.6 | 15.8 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | 30.0 | | | 17.0 | | | 38.2 | | | 27.1 | | |
| Approach LOS | C | | | B | | | D | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | | 6.0 | | | | | |
| Intersection Capacity Utilization | | | 61.7% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 | | | | | | | |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 22.8 | | | | | | | | | | | | |
| Approach LOS | | | | | | C | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 7.2 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 54.2% | | ICU Level of Service | | A | | | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | ←← | | ← | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 475 | 64 | 196 | 511 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 582 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 528 | 71 | 218 | 568 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 587 | 0 | 218 | 568 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 456 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.18 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.22 | | | | | | | | |
| v/c Ratio | | 0.44 | | 0.48 | 0.31 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 15.9 | 9.3 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.35 | 0.18 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 2.8 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.4 | | 8.4 | 2.0 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.4 | | | 3.8 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 44.9% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 481 | 0 | 0 | 644 | 129 | 63 | 90 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3130 | | | 4504 | | | | |
| Flt Permitted | 0.21 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 367 | 3320 | | | 3130 | | | 4504 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 534 | 0 | 0 | 716 | 143 | 70 | 100 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 534 | 0 | 0 | 840 | 0 | 0 | 191 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 359 | 1875 | | | 1289 | | | 1431 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.27 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.28 | | | 0.65 | | | 0.13 | | | | |
| Uniform Delay, d1 | 18.6 | 9.6 | | | 20.1 | | | 20.7 | | | | |
| Progression Factor | 0.43 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.9 | 0.4 | | | 2.6 | | | 0.2 | | | | |
| Delay (s) | 9.9 | 3.4 | | | 22.7 | | | 20.9 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 22.7 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 44.9% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 346 | 114 | 91 | 386 | 81 | 129 | 78 | 30 | 31 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2977 | | | 3007 | | | 1840 | | | 1769 | |
| Flt Permitted | | 0.66 | | | 0.69 | | | 0.72 | | | 0.95 | |
| Satd. Flow (perm) | | 1975 | | | 2105 | | | 1358 | | | 1683 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 384 | 127 | 101 | 429 | 90 | 143 | 87 | 33 | 34 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 8 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 604 | 0 | 0 | 599 | 0 | 0 | 255 | 0 | 0 | 223 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 699 | | | 745 | | | 669 | | | 829 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.28 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.86 | | | 0.80 | | | 0.38 | | | 0.27 | |
| Uniform Delay, d1 | | 19.6 | | | 19.0 | | | 10.3 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 13.5 | | | 9.0 | | | 1.6 | | | 0.8 | |
| Delay (s) | | 33.0 | | | 27.9 | | | 12.0 | | | 10.5 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 33.0 | | | 27.9 | | | 12.0 | | | 10.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.6 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.58 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 80.6% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 114 | 201 | 88 | 159 | 311 | 65 | 124 | 542 | 67 | 95 | 950 | 180 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 212 | 3069 | 1333 | 541 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 120 | 212 | 93 | 167 | 327 | 68 | 131 | 571 | 71 | 100 | 1000 | 189 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 45 | 0 | 0 | 120 |
| Lane Group Flow (vph) | 120 | 247 | 0 | 167 | 374 | 0 | 131 | 571 | 26 | 100 | 1000 | 69 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 181 | 1119 | 486 | 298 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.05 | 0.19 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.12 | | | c0.15 | | | 0.26 | | 0.02 | 0.12 | | 0.05 |
| v/c Ratio | 0.40 | 0.25 | | 0.49 | 0.31 | | 0.72 | 0.51 | 0.05 | 0.34 | 0.88 | 0.14 |
| Uniform Delay, d1 | 19.7 | 20.8 | | 20.7 | 21.3 | | 18.1 | 21.1 | 17.5 | 15.4 | 25.3 | 18.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.39 | 1.04 | 2.36 |
| Incremental Delay, d2 | 4.0 | 0.6 | | 4.9 | 0.7 | | 22.1 | 1.7 | 0.2 | 2.2 | 7.8 | 0.4 |
| Delay (s) | 23.7 | 21.5 | | 25.5 | 21.9 | | 40.2 | 22.7 | 17.7 | 23.7 | 34.2 | 43.2 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 22.1 | | | 23.0 | | | 25.2 | | | 34.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 70.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 49 | 295 | 30 | 33 | 393 | 24 | 33 | 102 | 41 | 36 | 134 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2002 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.91 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1777 | 1466 | | 1913 | 1480 | | 1861 | 1506 | | 1877 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 311 | 32 | 35 | 414 | 25 | 35 | 107 | 43 | 38 | 141 | 69 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 363 | 15 | 0 | 449 | 12 | 0 | 142 | 18 | 0 | 179 | 29 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 820 | 677 | | 883 | 683 | | 773 | 626 | | 780 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.23 | 0.01 | | 0.08 | 0.01 | | 0.10 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.51 | 0.02 | | 0.18 | 0.03 | | 0.23 | 0.05 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.3 | 9.5 | | 12.0 | 11.2 | | 12.3 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.55 | 0.41 | | 1.04 | 1.19 | | 1.04 | 0.94 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 2.0 | 0.0 | | 0.5 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | | 13.6 | 9.6 | | 8.8 | 3.9 | | 13.1 | 13.4 | | 13.4 | 10.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.3 | | | 8.5 | | | 13.2 | | | 12.7 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.38 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 83.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 317 | 20 | 51 | 299 | 51 | 10 | 109 | 23 | 115 | 214 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3072 | | 1550 | 3031 | | 1550 | 3017 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.53 | 1.00 | | 0.55 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3072 | | 864 | 3031 | | 892 | 3017 | | 1074 | 2991 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 352 | 22 | 57 | 332 | 57 | 11 | 121 | 26 | 128 | 238 | 72 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 21 | 0 | 0 | 15 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 367 | 0 | 57 | 368 | 0 | 11 | 132 | 0 | 128 | 268 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1512 | | 292 | 1026 | | 371 | 1253 | | 446 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.12 | | | c0.12 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.12 | | |
| v/c Ratio | 0.50 | 0.24 | | 0.20 | 0.36 | | 0.03 | 0.11 | | 0.29 | 0.22 | |
| Uniform Delay, d1 | 27.3 | 9.5 | | 15.2 | 16.2 | | 11.2 | 11.6 | | 12.6 | 12.2 | |
| Progression Factor | 0.93 | 0.56 | | 0.82 | 0.82 | | 0.86 | 0.85 | | 1.12 | 1.12 | |
| Incremental Delay, d2 | 9.8 | 0.4 | | 1.4 | 0.9 | | 0.0 | 0.0 | | 1.6 | 0.4 | |
| Delay (s) | 35.3 | 5.6 | | 13.9 | 14.2 | | 9.7 | 9.8 | | 15.7 | 14.0 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 11.0 | | | 14.2 | | | 9.8 | | | 14.5 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 39.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 267 | 88 | 245 | 330 | 63 | 104 | 295 | 189 | 55 | 282 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.95 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2984 | | 1550 | 3025 | | | 3133 | | | 3233 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.79 | | | 0.81 | |
| Satd. Flow (perm) | 813 | 2984 | | 1550 | 3025 | | | 2496 | | | 2628 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 297 | 98 | 272 | 367 | 70 | 116 | 328 | 210 | 61 | 313 | 56 |
| RTOR Reduction (vph) | 0 | 49 | 0 | 0 | 24 | 0 | 0 | 87 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 71 | 346 | 0 | 272 | 413 | 0 | 0 | 567 | 0 | 0 | 412 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 250 | 918 | | 143 | 1350 | | | 960 | | | 1011 | |
| v/s Ratio Prot | c0.12 | | | c0.18 | | | 0.14 | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.23 | | | 0.16 | | |
| v/c Ratio | 0.28 | 0.38 | | 1.90 | 0.31 | | | 0.59 | | | 0.41 | |
| Uniform Delay, d1 | 17.1 | 17.6 | | 29.5 | 11.5 | | | 15.9 | | | 14.6 | |
| Progression Factor | 0.65 | 0.60 | | 1.27 | 1.18 | | | 1.22 | | | 0.70 | |
| Incremental Delay, d2 | 2.8 | 1.2 | | 417.0 | 0.3 | | | 2.4 | | | 1.2 | |
| Delay (s) | 13.9 | 11.7 | | 454.6 | 13.8 | | | 21.8 | | | 11.4 | |
| Level of Service | B | B | | F | B | | | C | | | B | |
| Approach Delay (s) | 12.1 | | | 182.9 | | | 21.8 | | | 11.4 | | |
| Approach LOS | B | | | F | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 68.4 | | HCM Level of Service | | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 68.2% | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 75 | 645 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1529 | | | 1465 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 83 | 717 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 878 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 976 | | | 935 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.60 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.94 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.6 | | | 20.3 | | | | |
| Progression Factor | | 1.30 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.1 | | | 18.0 | | | 0.9 | | | | |
| Delay (s) | | 10.7 | | | 28.6 | | | 21.2 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 10.7 | | | 28.6 | | | 21.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.6 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 142 | 464 | 611 | 39 | 119 | 176 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 149 | 488 | 643 | 41 | 125 | 185 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.83 | | | | 0.83 | 0.83 |
| vC, conflicting volume | 701 | | | | 1474 | 686 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 538 | | | | 1469 | 519 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 82 | | | | 0 | 60 |
| cM capacity (veh/h) | 833 | | | | 95 | 458 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 638 | 684 | 125 | 185 | | |
| Volume Left | 149 | 0 | 125 | 0 | | |
| Volume Right | 0 | 41 | 0 | 185 | | |
| cSH | 833 | 1700 | 95 | 458 | | |
| Volume to Capacity | 0.18 | 0.40 | 1.32 | 0.40 | | |
| Queue Length 95th (ft) | 16 | 0 | 225 | 48 | | |
| Control Delay (s) | 4.4 | 0.0 | 281.6 | 18.1 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 4.4 | 0.0 | 124.4 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 25.4 | | | |
| Intersection Capacity Utilization | | | 88.5% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013


















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | |
| Volume (vph) | 690 | 0 | 1 | 620 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 767 | 0 | 1 | 689 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 767 | 0 | 0 | 690 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.44 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.40 | | |
| v/c Ratio | 0.63 | | | 1.08 | 0.03 | |
| Uniform Delay, d1 | 7.1 | | | 27.0 | 29.8 | |
| Progression Factor | 0.10 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | | | 60.3 | 0.2 | |
| Delay (s) | 0.9 | | | 87.3 | 30.1 | |
| Level of Service | A | | | F | C | |
| Approach Delay (s) | 0.9 | | | 87.3 | 30.1 | |
| Approach LOS | A | | | F | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 41.5 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.70 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 243 | 606 | 32 | 407 | 0 | 0 | 0 | 0 | 17 | 6 | 249 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 270 | 673 | 36 | 452 | 0 | 0 | 0 | 0 | 19 | 7 | 277 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 50 |
| cM capacity (veh/h) | 1119 | | | 1276 | | | 77 | 200 | 544 | 346 | 314 | 555 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 180 | 763 | 488 | 26 | 277 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 673 | 0 | 0 | 277 | | | | | | | |
| cSH | 1700 | 1700 | 1276 | 337 | 555 | | | | | | | |
| Volume to Capacity | 0.11 | 0.45 | 0.03 | 0.08 | 0.50 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 69 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.6 | 17.8 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.7 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 260 | 0 | 439 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 289 | 0 | 488 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 144 | 144 | 488 | | | |
| Volume Left (vph) | 144 | 144 | 488 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.26 | 0.26 | 0.68 | | | |
| Capacity (veh/h) | 536 | 537 | 701 | | | |
| Control Delay (s) | 10.3 | 10.3 | 17.7 | | | |
| Approach Delay (s) | 10.3 | | 17.7 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 40.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 530 | 345 | 313 | 770 | 0 | 0 | 0 | 0 | 279 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 558 | 363 | 329 | 811 | 0 | 0 | 0 | 0 | 294 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 113 |
| Lane Group Flow (vph) | 0 | 558 | 146 | 0 | 1140 | 0 | 0 | 0 | 0 | 162 | 558 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.42 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1443 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.18 | | | c0.33 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.12 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.72 | 0.49 | | 0.79 | | | | | 0.83 | 1.02 | 0.17 |
| Uniform Delay, d1 | | 55.5 | 51.9 | | 40.2 | | | | | 66.6 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.10 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.7 | 5.6 | | 0.3 | | | | | 24.9 | 43.6 | 0.2 |
| Delay (s) | | 61.2 | 57.5 | | 4.3 | | | | | 91.5 | 112.1 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 59.7 | | | 4.3 | | | 0.0 | | | 91.8 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.1 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.6 | | |
| Intersection Capacity Utilization | | | 81.0% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 292 | 517 | 0 | 0 | 750 | 144 | 332 | 214 | 206 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3059 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3059 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 574 | 0 | 0 | 833 | 160 | 369 | 238 | 229 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 66 | 0 | 69 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 574 | 0 | 0 | 833 | 94 | 284 | 483 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 84.6 | 84.6 | | | 36.4 | 36.4 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 84.6 | 84.6 | | | 36.4 | 36.4 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.53 | 0.53 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 849 | 1814 | | | 730 | 338 | 117 | 229 | | | | |
| v/s Ratio Prot | c0.20 | 0.17 | | | c0.26 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | 0.06 | | | | | | | |
| v/c Ratio | 0.38 | 0.32 | | | 1.14 | 0.28 | 2.43 | 2.11 | | | | |
| Uniform Delay, d1 | 22.3 | 21.3 | | | 61.8 | 50.9 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.05 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 79.4 | 0.4 | 667.5 | 512.9 | | | | |
| Delay (s) | 1.4 | 1.3 | | | 141.2 | 51.4 | 741.5 | 586.9 | | | | |
| Level of Service | A | A | | | F | D | F | F | | | | |
| Approach Delay (s) | | 1.3 | | | 126.8 | | 639.4 | | | | 0.0 | |
| Approach LOS | | A | | | F | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 242.6 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.79 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 69.6% | | | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 312 | 136 | 188 | 418 | 107 | 108 | 522 | 95 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1579 | 1600 | 1372 | 1594 | 1788 | | 1578 | 3000 | | 1537 | 3001 | |
| Flt Permitted | 0.15 | 1.00 | 1.00 | 0.35 | 1.00 | | 0.13 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 256 | 1600 | 1372 | 583 | 1788 | | 216 | 3000 | | 511 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 328 | 143 | 198 | 440 | 113 | 114 | 549 | 100 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 100 | 0 | 11 | 0 | 0 | 16 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 147 | 328 | 43 | 198 | 542 | 0 | 114 | 633 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | | 43.0 | 36.0 | | 40.2 | 34.6 | |
| Effective Green, g (s) | 32.0 | 28.0 | 27.0 | 32.0 | 27.0 | | 41.0 | 36.0 | | 38.2 | 34.6 | |
| Actuated g/C Ratio | 0.35 | 0.31 | 0.30 | 0.35 | 0.30 | | 0.45 | 0.40 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 178 | 494 | 409 | 273 | 533 | | 188 | 1192 | | 268 | 1146 | |
| v/s Ratio Prot | c0.05 | 0.20 | | 0.05 | c0.30 | | c0.04 | 0.21 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.24 | | 0.03 | 0.21 | | | 0.23 | | | 0.16 | | |
| v/c Ratio | 0.83 | 0.66 | 0.10 | 0.73 | 1.02 | | 0.61 | 0.53 | | 0.42 | 0.84 | |
| Uniform Delay, d1 | 23.9 | 27.2 | 23.0 | 24.8 | 31.8 | | 17.4 | 20.8 | | 16.7 | 25.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 25.7 | 6.9 | 0.5 | 9.2 | 43.5 | | 5.4 | 1.7 | | 1.1 | 7.3 | |
| Delay (s) | 49.6 | 34.1 | 23.5 | 34.0 | 75.3 | | 22.8 | 22.5 | | 17.8 | 32.7 | |
| Level of Service | D | C | C | C | E | | C | C | | B | C | |
| Approach Delay (s) | | 35.3 | | | 64.4 | | | 22.6 | | | 31.2 | |
| Approach LOS | | D | | | E | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.6 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 87.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 39 | 402 | 61 | 112 | 645 | 62 | 37 | 59 | 44 | 31 | 91 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1971 | 1467 | | 1624 | 1381 | | 1855 | | | 1873 | |
| Flt Permitted | | 0.63 | 1.00 | | 0.78 | 1.00 | | 0.90 | | | 0.95 | |
| Satd. Flow (perm) | | 1245 | 1467 | | 1276 | 1381 | | 1699 | | | 1791 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 423 | 64 | 118 | 679 | 65 | 39 | 62 | 46 | 33 | 96 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 18 | 0 | 25 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 464 | 34 | 0 | 797 | 47 | 0 | 122 | 0 | 0 | 171 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 613 | 722 | | 628 | 680 | | 706 | | | 744 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.37 | 0.02 | | 0.62 | 0.03 | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.76 | 0.05 | | 1.27 | 0.07 | | 0.17 | | | 0.23 | |
| Uniform Delay, d1 | | 13.4 | 8.6 | | 16.5 | 8.7 | | 12.0 | | | 12.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.88 | 2.75 | | 1.00 | | | 1.95 | |
| Incremental Delay, d2 | | 8.5 | 0.1 | | 122.3 | 0.0 | | 0.5 | | | 0.7 | |
| Delay (s) | | 21.8 | 8.7 | | 153.4 | 23.8 | | 12.5 | | | 24.6 | |
| Level of Service | | C | A | | F | C | | B | | | C | |
| Approach Delay (s) | | 20.2 | | | 143.6 | | | 12.5 | | | 24.6 | |
| Approach LOS | | C | | | F | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 81.2 | | | | HCM Level of Service | | | | F | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 90.6% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 59 | 318 | 41 | 110 | 700 | 20 | 36 | 114 | 44 | 17 | 184 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1756 | 1443 | | 1724 | 1487 | | 1713 | 1489 | | 1712 | |
| Flt Permitted | | 0.18 | 1.00 | | 0.65 | 1.00 | | 0.89 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 318 | 1443 | | 1125 | 1487 | | 1541 | 1489 | | 1685 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 335 | 43 | 116 | 737 | 21 | 38 | 120 | 46 | 18 | 194 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 5 | 0 | 0 | 23 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 397 | 19 | 0 | 853 | 16 | 0 | 158 | 23 | 0 | 267 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 113 | 511 | | 398 | 526 | | 759 | 733 | | 830 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c1.25 | 0.01 | | 0.76 | 0.01 | | 0.10 | 0.02 | | c0.16 | |
| v/c Ratio | | 3.51 | 0.04 | | 2.14 | 0.03 | | 0.21 | 0.03 | | 0.32 | |
| Uniform Delay, d1 | | 21.0 | 13.8 | | 21.0 | 13.7 | | 9.3 | 8.5 | | 10.0 | |
| Progression Factor | | 1.63 | 2.35 | | 0.98 | 0.86 | | 0.16 | 0.22 | | 1.07 | |
| Incremental Delay, d2 | | 1147.0 | 0.1 | | 518.3 | 0.0 | | 0.1 | 0.0 | | 1.0 | |
| Delay (s) | | 1181.3 | 32.5 | | 538.8 | 11.8 | | 1.5 | 1.9 | | 11.6 | |
| Level of Service | | F | C | | F | B | | A | A | | B | |
| Approach Delay (s) | | 1069.0 | | | 526.2 | | | 1.6 | | | 11.6 | |
| Approach LOS | | F | | | F | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 517.7 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.66 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 101.4% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 298 | 35 | 76 | 8 | 14 | 11 | 38 | 247 | 8 | 31 | 570 | 799 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1855 | 1440 | | 1767 | | | 1995 | | | 1975 | 1382 |
| Flt Permitted | | 0.75 | 1.00 | | 0.92 | | | 0.79 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1455 | 1440 | | 1640 | | | 1587 | | | 1930 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 331 | 39 | 84 | 9 | 16 | 12 | 42 | 274 | 9 | 34 | 633 | 888 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 295 |
| Lane Group Flow (vph) | 0 | 370 | 35 | 0 | 28 | 0 | 0 | 323 | 0 | 0 | 667 | 593 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 654 | 598 | | 429 | | | 781 | | | 950 | 680 |
| v/s Ratio Prot | | c0.07 | | | | | | | | | | |
| v/s Ratio Perm | | 0.17 | 0.02 | | 0.02 | | | 0.20 | | | 0.35 | c0.43 |
| v/c Ratio | | 0.57 | 0.06 | | 0.07 | | | 0.41 | | | 0.70 | 0.87 |
| Uniform Delay, d1 | | 14.5 | 11.4 | | 18.0 | | | 10.5 | | | 12.8 | 14.7 |
| Progression Factor | | 1.18 | 1.99 | | 1.00 | | | 0.41 | | | 0.76 | 1.11 |
| Incremental Delay, d2 | | 0.3 | 0.0 | | 0.3 | | | 0.6 | | | 4.0 | 13.4 |
| Delay (s) | | 17.5 | 22.7 | | 18.3 | | | 4.9 | | | 13.7 | 29.7 |
| Level of Service | | B | C | | B | | | A | | | B | C |
| Approach Delay (s) | | 18.5 | | | 18.3 | | | 4.9 | | | 22.9 | |
| Approach LOS | | B | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.5 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 95.4% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 923 | 289 | 447 | 1189 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4577 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.09 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4577 | | 157 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 972 | 304 | 471 | 1252 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 58 |
| Lane Group Flow (vph) | 0 | 1229 | 0 | 471 | 1252 | 0 | 0 | 0 | 0 | 308 | 603 | 213 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 39.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 39.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.34 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1552 | | 502 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.27 | | 0.26 | 0.38 | | | | | | | |
| v/s Ratio Perm | | | | 0.36 | | | | | | 0.21 | 0.21 | 0.15 |
| v/c Ratio | | 0.79 | | 0.94 | 0.58 | | | | | 0.85 | 0.85 | 0.60 |
| Uniform Delay, d1 | | 34.3 | | 32.7 | 11.2 | | | | | 41.4 | 41.4 | 38.5 |
| Progression Factor | | 1.00 | | 0.77 | 2.00 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.2 | | 14.8 | 0.5 | | | | | 16.7 | 9.4 | 3.1 |
| Delay (s) | | 38.6 | | 40.1 | 22.9 | | | | | 58.1 | 50.8 | 41.6 |
| Level of Service | | D | | D | C | | | | | E | D | D |
| Approach Delay (s) | | 38.6 | | | 27.6 | | | 0.0 | | | 50.6 | |
| Approach LOS | | D | | | C | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 10.5 | | |
| Intersection Capacity Utilization | | | 111.8% | | | ICU Level of Service | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1095 | 0 | 0 | 1206 | 271 | 430 | 351 | 337 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Flt Permitted | 0.08 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 280 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1153 | 0 | 0 | 1269 | 285 | 453 | 369 | 355 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 67 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1153 | 0 | 0 | 1269 | 208 | 0 | 1110 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 73.3 | 73.3 | | | 53.3 | 53.3 | | 29.7 | | | | |
| Effective Green, g (s) | 73.3 | 73.3 | | | 53.3 | 53.3 | | 29.7 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.46 | 0.46 | | 0.26 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 527 | 2137 | | | 1502 | 690 | | 1166 | | | | |
| v/s Ratio Prot | c0.08 | 0.34 | | | c0.39 | | | | | | | |
| v/s Ratio Perm | 0.35 | | | | | 0.14 | | 0.25 | | | | |
| v/c Ratio | 0.68 | 0.54 | | | 0.84 | 0.30 | | 0.95 | | | | |
| Uniform Delay, d1 | 24.7 | 11.5 | | | 27.2 | 19.2 | | 41.9 | | | | |
| Progression Factor | 1.52 | 0.13 | | | 0.87 | 1.12 | | 1.00 | | | | |
| Incremental Delay, d2 | 2.1 | 0.6 | | | 3.2 | 0.6 | | 16.4 | | | | |
| Delay (s) | 39.5 | 2.0 | | | 26.8 | 22.2 | | 58.4 | | | | |
| Level of Service | D | A | | | C | C | | E | | | | |
| Approach Delay (s) | | 10.9 | | | 26.0 | | | 58.4 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.6 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.86 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 111.8% | | ICU Level of Service | | | H | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 719 | 408 | 104 | 968 | 76 | 227 | 179 | 66 | 80 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1601 | 3286 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.36 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 614 | 3286 | | 652 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 757 | 429 | 109 | 1019 | 80 | 239 | 188 | 69 | 84 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 5 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 142 | 757 | 256 | 109 | 1094 | 0 | 239 | 219 | 0 | 84 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | | pm+pt | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.9 | 52.3 | 68.7 | 43.5 | 34.4 | | 38.1 | 26.5 | | 26.3 | 18.2 | |
| Effective Green, g (s) | 64.9 | 52.3 | 68.7 | 43.5 | 34.4 | | 38.1 | 26.5 | | 26.3 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 425 | 1489 | 784 | 310 | 983 | | 348 | 692 | | 261 | 465 | |
| v/s Ratio Prot | c0.08 | c0.23 | 0.05 | 0.03 | c0.33 | | c0.10 | 0.07 | | 0.02 | 0.06 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.10 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.51 | 0.33 | 0.35 | 1.11 | | 0.69 | 0.32 | | 0.32 | 0.41 | |
| Uniform Delay, d1 | 17.5 | 22.2 | 11.6 | 23.9 | 40.3 | | 30.6 | 36.7 | | 36.2 | 43.6 | |
| Progression Factor | 0.77 | 0.75 | 1.59 | 1.00 | 1.00 | | 1.03 | 1.05 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 1.0 | 0.2 | 0.7 | 65.0 | | 5.3 | 0.9 | | 0.7 | 2.1 | |
| Delay (s) | 15.1 | 17.7 | 18.7 | 24.5 | 105.3 | | 36.8 | 39.6 | | 36.9 | 45.7 | |
| Level of Service | B | B | B | C | F | | D | D | | D | D | |
| Approach Delay (s) | | 17.7 | | | 98.0 | | | 38.2 | | | 43.7 | |
| Approach LOS | | B | | | F | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 52.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 19.0 | | | |
| Intersection Capacity Utilization | | | 81.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 46 | 250 | 367 | 95 | 441 | 113 | 362 | 340 | 84 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 2925 | | 1653 | 3267 | | 1620 | 3402 | | 1580 | 3183 | |
| Flt Permitted | 0.34 | 1.00 | | 0.22 | 1.00 | | 0.32 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 619 | 2925 | | 375 | 3267 | | 544 | 3402 | | 822 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 100 | 464 | 119 | 381 | 358 | 88 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 215 | 0 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 434 | 0 | 100 | 564 | 0 | 381 | 427 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 39.2 | 32.5 | | 46.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 39.2 | 32.5 | | 46.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.34 | 0.28 | | 0.40 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 274 | 827 | | 266 | 1026 | | 454 | 1308 | | 339 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.03 | c0.17 | | c0.15 | 0.13 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.05 | | | 0.12 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.18 | 0.52 | | 0.38 | 0.55 | | 0.84 | 0.33 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 25.9 | 34.7 | | 23.2 | 32.7 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Incremental Delay, d2 | 0.4 | 2.4 | | 1.1 | 2.1 | | 13.1 | 0.7 | | 4.0 | 2.2 | |
| Delay (s) | 26.3 | 37.1 | | 24.3 | 34.8 | | 33.9 | 25.6 | | 32.8 | 36.1 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 36.4 | | | 33.3 | | | 29.4 | | | 35.1 | |
| Approach LOS | | D | | | C | | | C | | | D | |



















Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 33.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 115.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 77.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 695 | 141 | 10 | 741 | 89 | 104 | 287 | 9 | 204 | 609 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3039 | | | 3060 | | 1452 | 3227 | | 1522 | 2872 | |
| Flt Permitted | | 0.52 | | | 0.94 | | 0.19 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | | 1604 | | | 2872 | | 284 | 3227 | | 873 | 2872 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 772 | 157 | 11 | 823 | 99 | 116 | 319 | 10 | 227 | 677 | 203 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 14 | 0 | 0 | 3 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 1024 | 0 | 0 | 919 | 0 | 116 | 326 | 0 | 227 | 836 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 705 | | | 751 | | 194 | 1192 | | 416 | 1060 | |
| v/s Ratio Prot | | c0.09 | | | | | c0.04 | 0.10 | | 0.03 | c0.29 | |
| v/s Ratio Perm | | c0.47 | | | 0.32 | | 0.22 | | | 0.20 | | |
| v/c Ratio | | 1.45 | | | 1.22 | | 0.60 | 0.27 | | 0.55 | 0.79 | |
| Uniform Delay, d1 | | 20.0 | | | 24.0 | | 12.5 | 14.4 | | 12.7 | 18.2 | |
| Progression Factor | | 1.00 | | | 1.42 | | 1.18 | 0.57 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 211.4 | | | 101.8 | | 12.2 | 0.5 | | 5.1 | 6.0 | |
| Delay (s) | | 231.4 | | | 136.0 | | 27.0 | 8.7 | | 17.8 | 24.2 | |
| Level of Service | | F | | | F | | C | A | | B | C | |
| Approach Delay (s) | | 231.4 | | | 136.0 | | | 13.5 | | | 22.9 | |
| Approach LOS | | F | | | F | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 113.4 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.07 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | | |
| Intersection Capacity Utilization | | 96.8% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

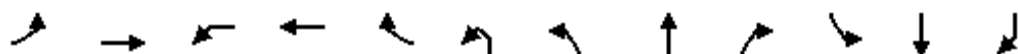
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 261 | 136 | 132 | 418 | 28 | 72 | 462 | 86 | 35 | 698 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1910 | | 1601 | 2019 | | 1676 | 3215 | | 1435 | 3274 | |
| Flt Permitted | 0.31 | 1.00 | | 0.37 | 1.00 | | 0.29 | 1.00 | | 0.42 | 1.00 | |
| Satd. Flow (perm) | 557 | 1910 | | 621 | 2019 | | 516 | 3215 | | 627 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 269 | 140 | 136 | 431 | 29 | 74 | 476 | 89 | 36 | 720 | 72 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 4 | 0 | 0 | 24 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 69 | 380 | 0 | 136 | 456 | 0 | 74 | 541 | 0 | 36 | 780 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 206 | 705 | | 229 | 745 | | 246 | 1533 | | 299 | 1561 | |
| v/s Ratio Prot | | 0.20 | | | c0.23 | | | 0.17 | | | c0.24 | |
| v/s Ratio Perm | 0.12 | | | 0.22 | | | 0.14 | | | 0.06 | | |
| v/c Ratio | 0.33 | 0.54 | | 0.59 | 0.61 | | 0.30 | 0.35 | | 0.12 | 0.50 | |
| Uniform Delay, d1 | 14.8 | 16.1 | | 16.6 | 16.7 | | 10.4 | 10.7 | | 9.4 | 11.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.34 | 1.35 | | 1.00 | 1.00 | | 1.18 | 0.96 | |
| Incremental Delay, d2 | 4.3 | 2.9 | | 1.0 | 0.3 | | 3.1 | 0.6 | | 0.3 | 0.4 | |
| Delay (s) | 19.1 | 19.1 | | 23.2 | 22.9 | | 13.5 | 11.3 | | 11.5 | 11.6 | |
| Level of Service | B | B | | C | C | | B | B | | B | B | |
| Approach Delay (s) | | 19.1 | | | 23.0 | | | 11.6 | | | 11.6 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 75.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|--------|--------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔↔ | | ↔↔ | | | | ↔ | | | ↔ | |
| Volume (vph) | 2 | 883 | 501 | 938 | 41 | 3 | 10 | 9 | 47 | 15 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3077 | | | | 1810 | | | 1858 | |
| Flt Permitted | | 0.78 | | 0.58 | | | | 0.96 | | | 0.85 | |
| Satd. Flow (perm) | | 2476 | | 1809 | | | | 1748 | | | 1633 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 929 | 527 | 987 | 43 | 3 | 11 | 9 | 49 | 16 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 931 | 0 | 1554 | 0 | 0 | 0 | 34 | 0 | 0 | 20 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | custom | | | | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 686 | | 868 | | | | 376 | | | 352 | |
| v/s Ratio Prot | | | | c0.17 | | | | | | | | |
| v/s Ratio Perm | | 0.38 | | c0.58 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 1.36 | | 2.51dl | | | | 0.09 | | | 0.06 | |
| Uniform Delay, d1 | | 23.5 | | 19.0 | | | | 20.4 | | | 20.3 | |
| Progression Factor | | 1.42 | | 0.62 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 161.6 | | 358.6 | | | | 0.5 | | | 0.3 | |
| Delay (s) | | 194.9 | | 370.4 | | | | 20.9 | | | 20.6 | |
| Level of Service | | F | | F | | | | C | | | C | |
| Approach Delay (s) | | 194.9 | | 370.4 | | | | 20.9 | | | 20.6 | |
| Approach LOS | | F | | F | | | | C | | | C | |

Intersection Summary

| | | | |
|---|--------|----------------------|------|
| HCM Average Control Delay | 285.1 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.23 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 119.6% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | SBR2 | NEL | NER |
|------------------------|------|-------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 311 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1559 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1559 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 327 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 330 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.21 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 1.38 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 0.84 | |
| Incremental Delay, d2 | | 190.6 | |
| Delay (s) | | 213.6 | |
| Level of Service | | F | |
| Approach Delay (s) | | 213.6 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 264 | 965 | 1254 | 177 | 125 | 234 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3285 | 3259 | | 1660 | 1485 |
| Flt Permitted | | 0.51 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1708 | 3259 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 293 | 1072 | 1393 | 197 | 139 | 260 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 38 |
| Lane Group Flow (vph) | 0 | 1365 | 1573 | 0 | 139 | 222 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1051 | 2006 | | 434 | 388 |
| v/s Ratio Prot | | | 0.48 | | 0.08 | |
| v/s Ratio Perm | | c0.80 | | | | c0.15 |
| v/c Ratio | | 2.71dl | 0.78 | | 0.32 | 0.57 |
| Uniform Delay, d1 | | 12.5 | 9.3 | | 19.3 | 20.8 |
| Progression Factor | | 1.24 | 0.60 | | 1.06 | 1.03 |
| Incremental Delay, d2 | | 135.1 | 1.4 | | 1.1 | 3.5 |
| Delay (s) | | 150.7 | 7.0 | | 21.5 | 25.0 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 150.7 | 7.0 | | 23.8 | |
| Approach LOS | | F | A | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 67.5 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.08 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 96.1% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 81 | 1012 | 1347 | 198 | 276 | 88 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3120 | 3139 | | 1506 | 1343 |
| Flt Permitted | | 0.60 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1875 | 3139 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 85 | 1065 | 1418 | 208 | 291 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 17 |
| Lane Group Flow (vph) | 0 | 1150 | 1608 | 0 | 291 | 76 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 981 | 1642 | | 533 | 475 |
| v/s Ratio Prot | | | 0.51 | | 0.19 | |
| v/s Ratio Perm | | 0.61 | | | | 0.06 |
| v/c Ratio | | 1.17 | 0.98 | | 0.55 | 0.16 |
| Uniform Delay, d1 | | 15.5 | 15.2 | | 16.8 | 14.4 |
| Progression Factor | | 1.10 | 1.47 | | 1.75 | 2.04 |
| Incremental Delay, d2 | | 78.6 | 3.4 | | 3.1 | 0.6 |
| Delay (s) | | 95.7 | 25.7 | | 32.5 | 29.9 |
| Level of Service | | F | C | | C | C |
| Approach Delay (s) | | 95.7 | 25.7 | | 31.9 | |
| Approach LOS | | F | C | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 51.9 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.92 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 104.1% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave






















1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 887 | 261 | 532 | 1433 | 205 | 161 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.94 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.97 | |
| Satd. Flow (prot) | 2404 | | 1788 | 2506 | 1734 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.97 | |
| Satd. Flow (perm) | 2404 | | 243 | 2506 | 1734 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 905 | 266 | 543 | 1462 | 209 | 164 |
| RTOR Reduction (vph) | 16 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 1155 | 0 | 543 | 1462 | 329 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1147 | | 116 | 1195 | 640 | |
| v/s Ratio Prot | 0.48 | | | 0.58 | c0.19 | |
| v/s Ratio Perm | | | c2.24 | | | |
| v/c Ratio | 1.01 | | 4.68 | 1.22 | 0.51 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 17.0 | 16.0 | |
| Progression Factor | 1.46 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 9.7 | | 1676.0 | 108.2 | 2.9 | |
| Delay (s) | 34.5 | | 1693.0 | 125.2 | 18.9 | |
| Level of Service | C | | F | F | B | |
| Approach Delay (s) | 34.5 | | | 549.8 | 18.9 | |
| Approach LOS | C | | | F | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 324.0 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 2.87 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 117.7% | | ICU Level of Service | H |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  | |
| Volume (vph) | 1 | 2022 | 38 | 112 | 961 | 1 | 62 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.27 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 530 | 3431 | 1479 | 130 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 2247 | 42 | 124 | 1068 | 1 | 69 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 138 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 2247 | 32 | 124 | 1068 | 1 | 0 | 69 | 36 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 48.6 | 48.6 | 48.6 | 67.6 | 67.6 | 67.6 | | 9.4 | 9.4 | | | |
| Effective Green, g (s) | 48.6 | 48.6 | 48.6 | 67.6 | 67.6 | 67.6 | | 9.4 | 9.4 | | | |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.57 | 0.80 | 0.80 | 0.80 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 303 | 1962 | 846 | 378 | 2640 | 1217 | | 171 | 166 | | | |
| v/s Ratio Prot | | c0.65 | | 0.06 | c0.32 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.20 | | 0.00 | | c0.04 | 0.02 | | | |
| v/c Ratio | 0.00 | 1.15 | 0.04 | 0.33 | 0.40 | 0.00 | | 0.40 | 0.22 | | | |
| Uniform Delay, d1 | 7.8 | 18.2 | 8.0 | 16.3 | 2.6 | 1.8 | | 35.2 | 34.4 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 71.9 | 0.1 | 0.5 | 0.1 | 0.0 | | 1.6 | 0.7 | | | |
| Delay (s) | 7.8 | 90.1 | 8.0 | 16.8 | 2.7 | 1.8 | | 36.7 | 35.1 | | | |
| Level of Service | A | F | A | B | A | A | | D | D | | | |
| Approach Delay (s) | | 88.6 | | | 4.2 | | | 35.6 | | | 0.0 | |
| Approach LOS | | F | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.1 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 80.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




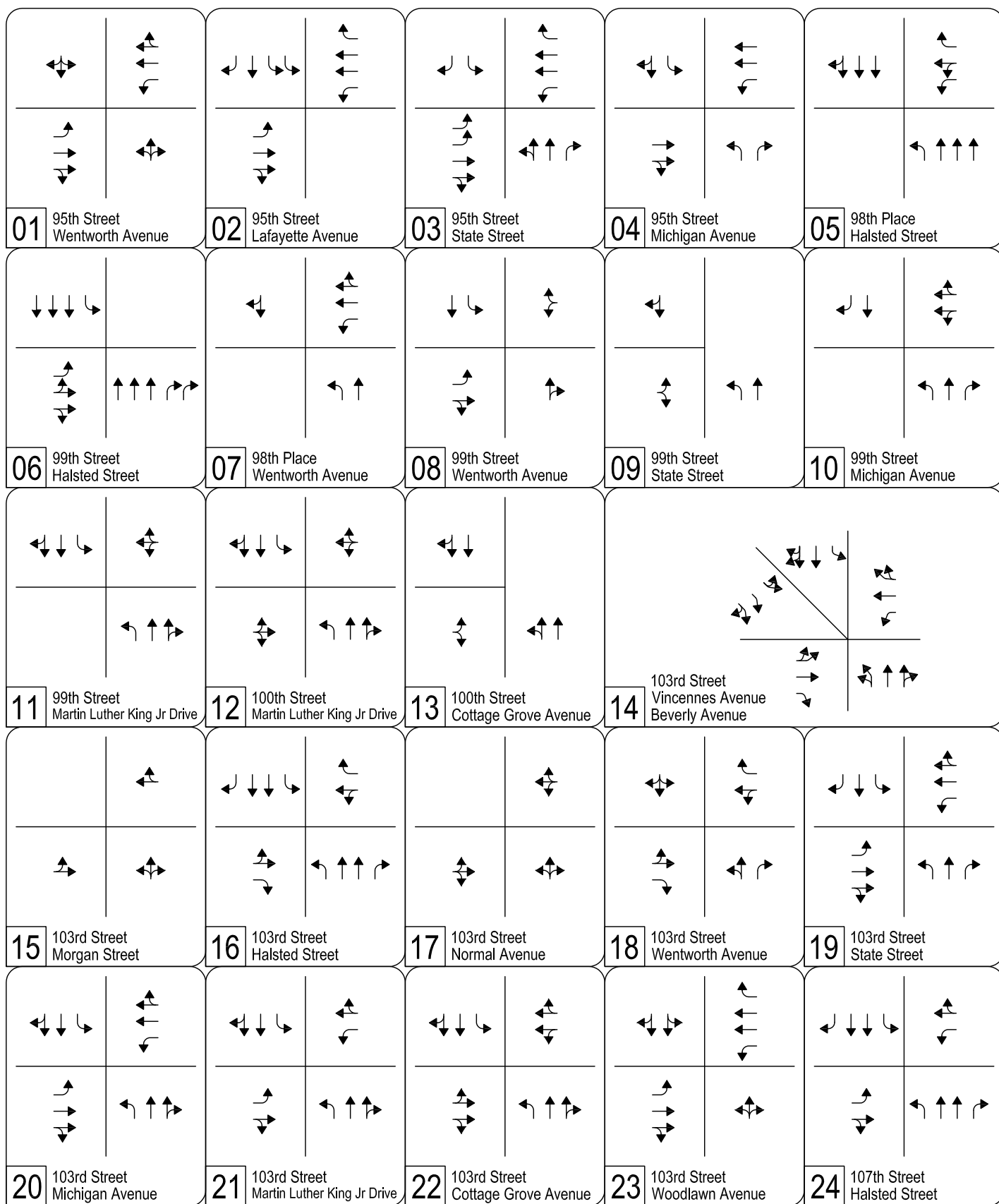
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 960 | 846 | 30 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2912 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1067 | 940 | 33 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1079 | 970 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.01 | 0.44 | | 0.73 | |
| Uniform Delay, d1 | | 28.5 | 5.5 | | 40.6 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 30.1 | 0.2 | | 32.1 | |
| Delay (s) | | 58.6 | 0.2 | | 72.7 | |
| Level of Service | | E | A | | E | |
| Approach Delay (s) | | 58.6 | 0.2 | | 72.7 | |
| Approach LOS | | E | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 32.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.77 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 48.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

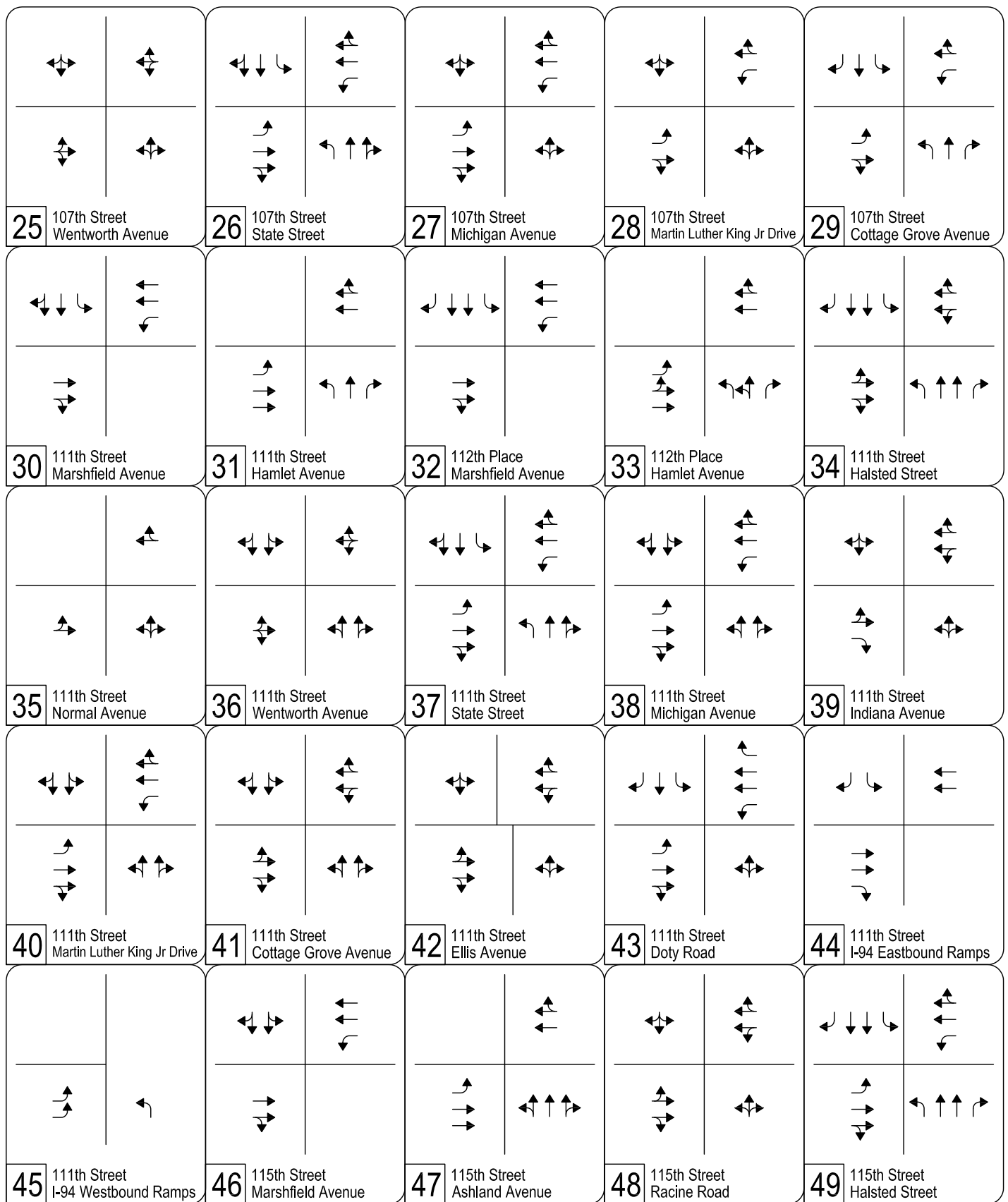
| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 107 | 500 | 0 | 1 | 583 | 39 | 3 | 2 | 28 | 202 | 0 | 150 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1764 | | | 3341 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.77 | | | 0.95 | | | 0.88 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1365 | | | 3191 | | | 1296 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 556 | 0 | 1 | 648 | 43 | 3 | 2 | 31 | 224 | 0 | 167 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 112 |
| Lane Group Flow (vph) | 0 | 675 | 0 | 0 | 686 | 0 | 0 | 8 | 0 | 0 | 224 | 55 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 498 | | | 1714 | | | 137 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.07 | | | | | | c0.09 | |
| v/s Ratio Perm | | c0.49 | | | 0.15 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.36 | | | 0.40 | | | 0.06 | | | 0.47 | 0.12 |
| Uniform Delay, d1 | | 27.0 | | | 11.9 | | | 34.2 | | | 24.6 | 19.9 |
| Progression Factor | | 1.00 | | | 1.37 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 172.7 | | | 0.1 | | | 0.8 | | | 3.3 | 0.6 |
| Delay (s) | | 199.7 | | | 16.5 | | | 35.0 | | | 27.8 | 20.5 |
| Level of Service | | F | | | B | | | D | | | C | C |
| Approach Delay (s) | | 199.7 | | | 16.5 | | | 35.0 | | | 24.7 | |
| Approach LOS | | F | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 87.6 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 81.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



UPRR ROW Option Alternative Mitigated (2030) Intersection Lane Geometry

Page 1 of 3

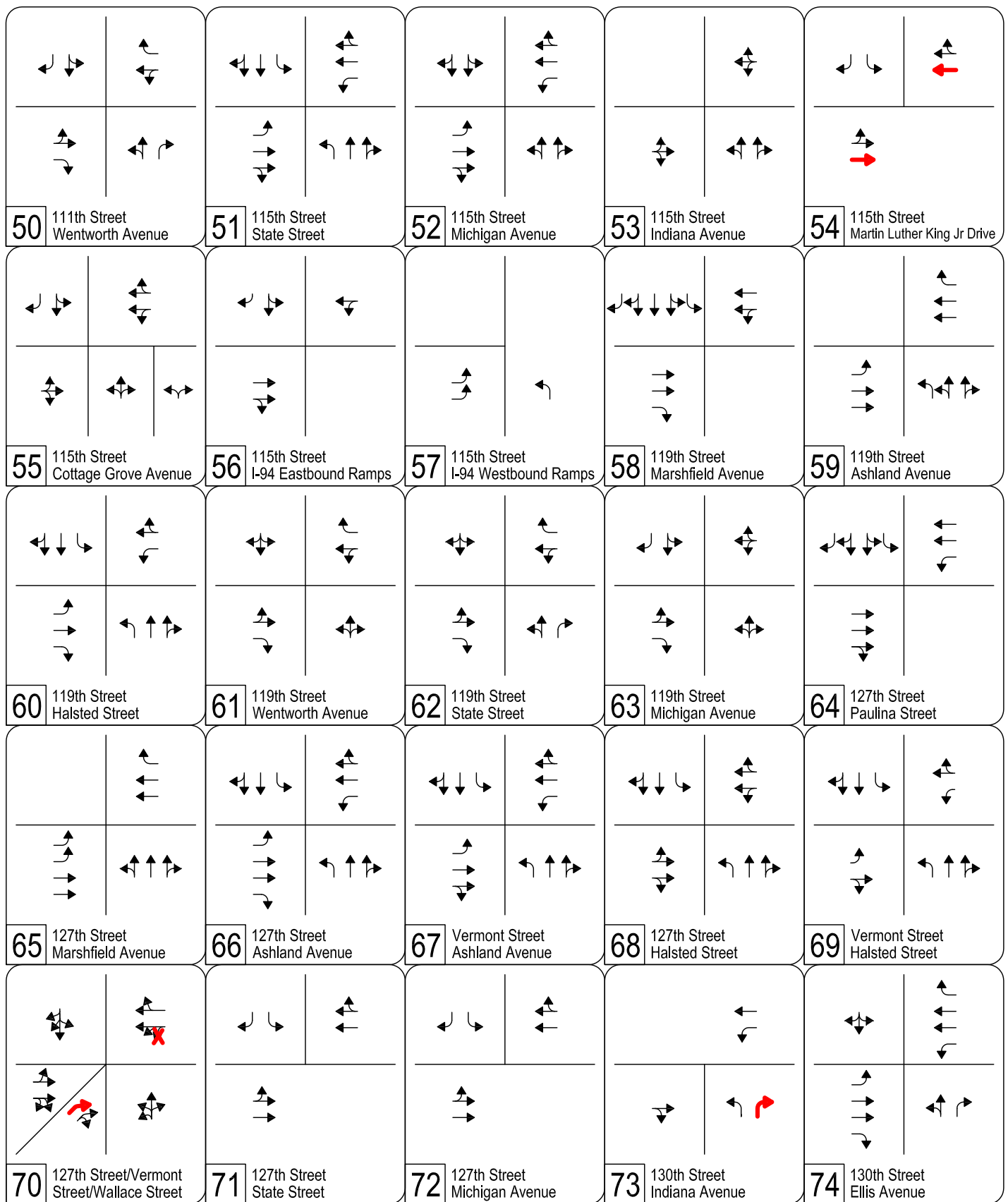
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UPRR ROW Option Alternative Mitigated (2030) Intersection Lane Geometry

Page 2 of 3

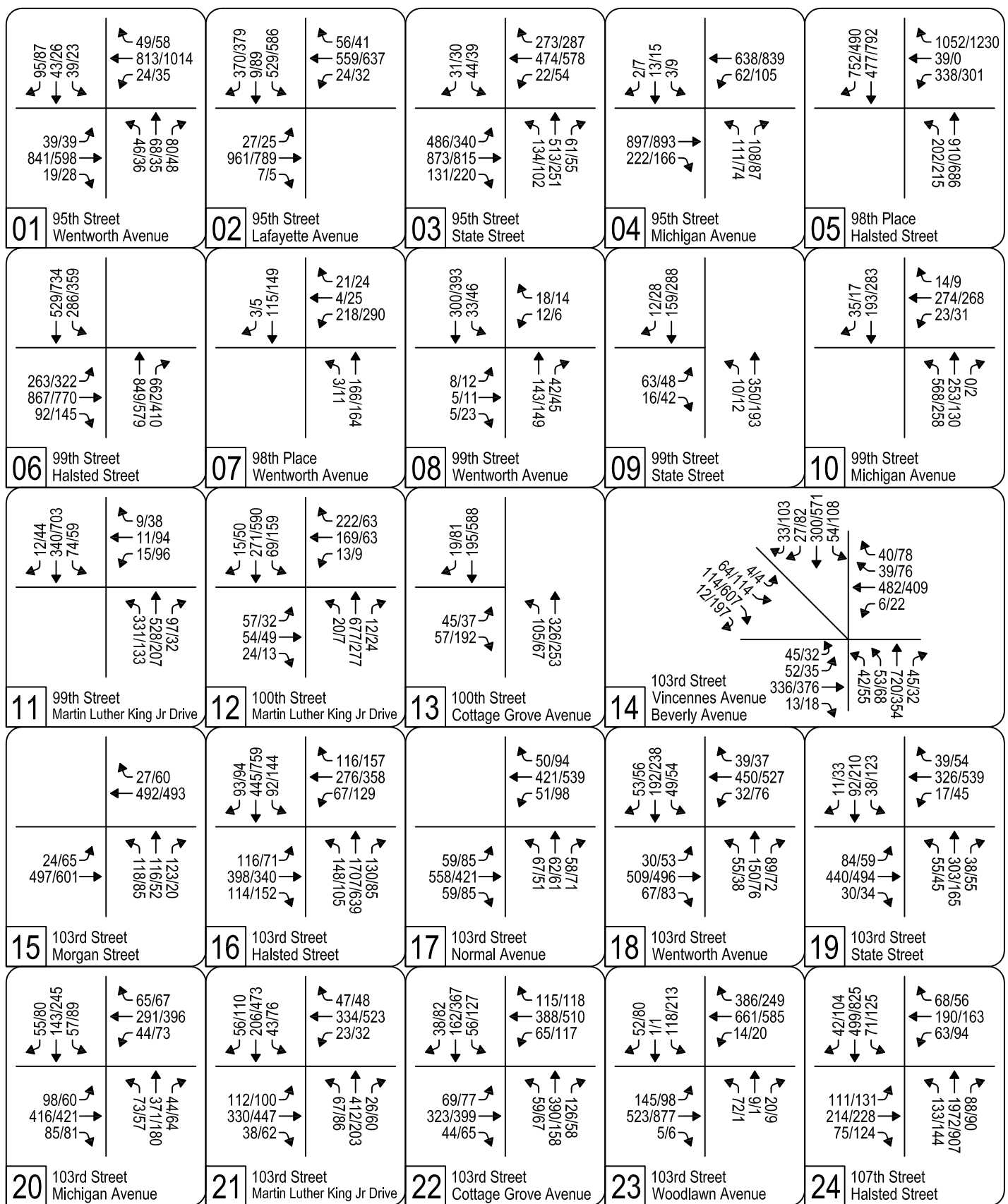
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UPRR ROW Option Alternative Mitigated (2030) Intersection Lane Geometry

Page 3 of 3

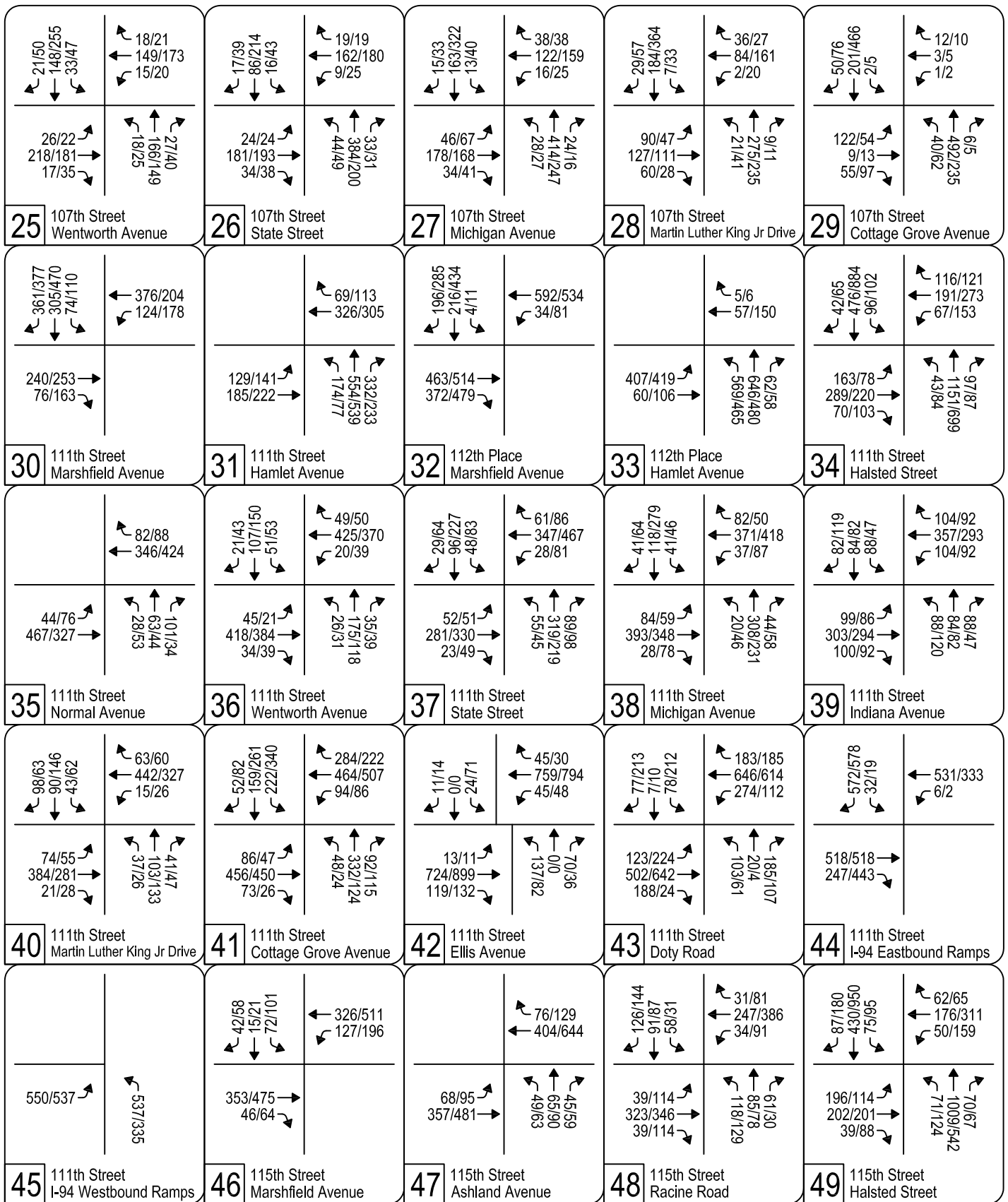
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UPRR ROW Option Alternative Mitigated (2030) Intersection Traffic Volumes

Page 1 of 3

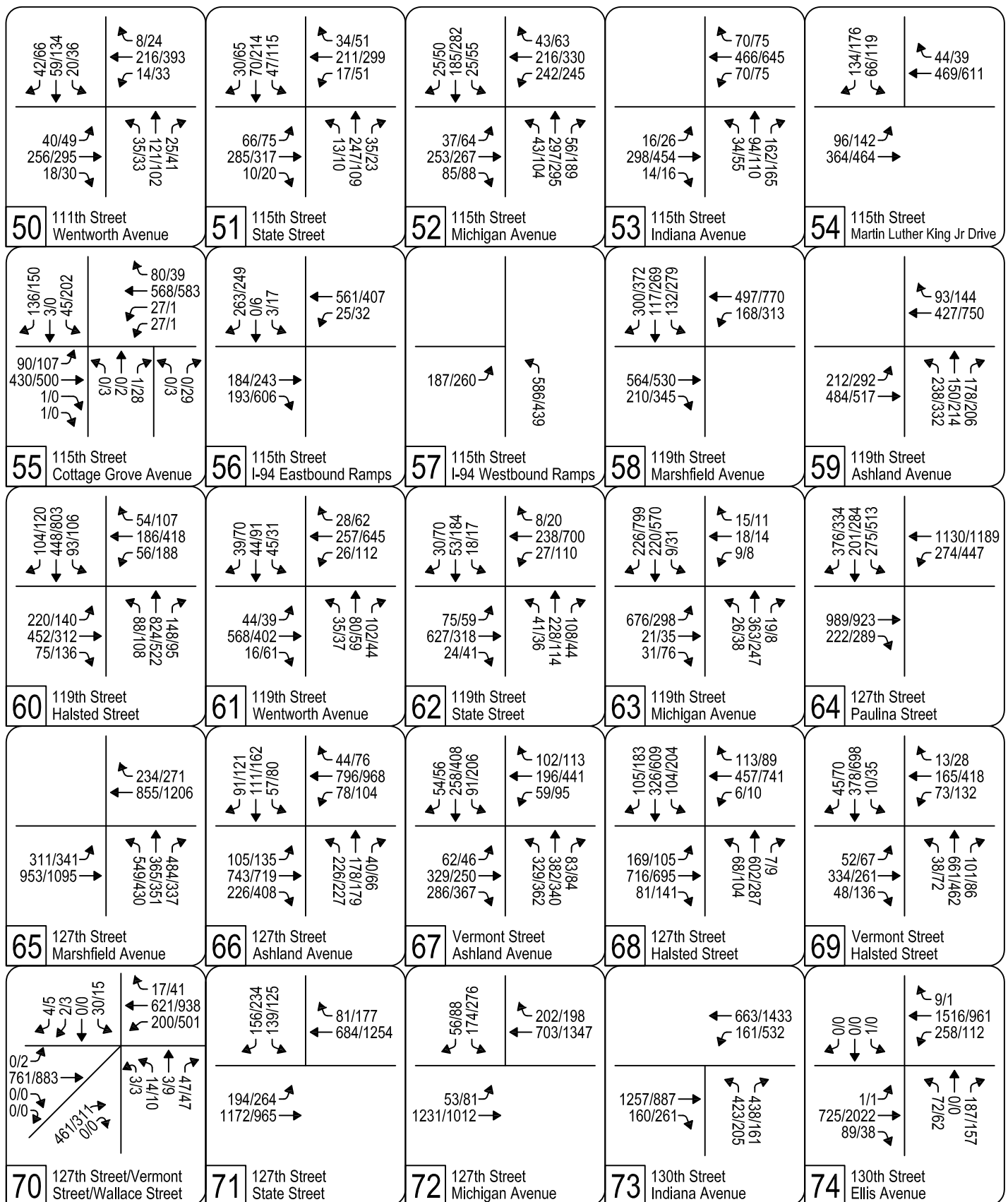
Legend: AM/PM Peak Hour Volumes



UPRR ROW Option Alternative Mitigated (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes





















UPRR ROW Option Alternative Mitigated (2030) Intersection Traffic Volumes
Page 3 of 3
Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 68 | 80 | 39 | 43 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1755 | | | 1673 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1531 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 72 | 84 | 41 | 45 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 165 | 0 | 0 | 127 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | c0.30 | | | 0.30 | | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.6 | | | 16.4 | | | 15.8 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | 12.1 | | | 13.5 | | | 16.4 | | | 15.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 55.1% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 56 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 59 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 33 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.12 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.4 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.63 | 1.53 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.5 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.2 | 48.9 | | 4.5 | 10.0 | 20.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 10.7 | | | 0.0 | | | 55.4 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 474 | 273 | 134 | 513 | 61 | 44 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 499 | 287 | 141 | 540 | 64 | 46 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 512 | 1049 | 0 | 23 | 499 | 129 | 0 | 681 | 39 | 46 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.17 | | | c0.21 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.49 | 0.67 | | 0.21 | 0.72 | 0.57 | | 0.89 | 0.12 | 0.87 | | 0.05 |
| Uniform Delay, d1 | 34.7 | 24.5 | | 57.2 | 45.5 | 43.6 | | 48.5 | 39.5 | 60.5 | | 57.4 |
| Progression Factor | 0.75 | 0.20 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 6.2 | 10.1 | | 14.9 | 0.7 | 76.0 | | 0.4 |
| Delay (s) | 26.9 | 6.0 | | 61.6 | 51.7 | 53.8 | | 60.7 | 36.2 | 136.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.8 | | | 52.7 | | | 58.6 | | | 103.6 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.8 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | 13.0 | | | |
| Intersection Capacity Utilization | | | 72.7% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 897 | 222 | 62 | 638 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 267 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 247 | 69 | 709 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1222 | 0 | 69 | 709 | 0 | 123 | 0 | 43 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | custom | | | custom | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | | | | 6 | | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Effective Green, g (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Actuated g/C Ratio | 0.60 | | | 0.60 | | | 0.32 | | | 0.32 | | |
| Clearance Time (s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 1716 | | | 160 | | | 350 | | | 469 | | |
| v/s Ratio Prot | c0.43 | | | 0.24 | | | | | | 0.01 | | |
| v/s Ratio Perm | | | | 0.26 | | | c0.11 | | | 0.03 | | |
| v/c Ratio | 0.71 | | | 0.43 | | | 0.35 | | | 0.09 | | |
| Uniform Delay, d1 | 14.0 | | | 10.8 | | | 26.0 | | | 23.8 | | |
| Progression Factor | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 2.5 | | | 8.3 | | | 0.6 | | | 2.8 | | |
| Delay (s) | 16.5 | | | 19.1 | | | 11.1 | | | 28.8 | | |
| Level of Service | B | | | B | | | C | | | C | | |
| Approach Delay (s) | 16.5 | | | 11.8 | | | 26.5 | | | 23.3 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 60.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 338 | 39 | 1052 | 202 | 910 | 0 | 0 | 477 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 487 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 1254 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.23 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.77 | 0.08 | 2.54 | 0.44 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.7 | 26.7 | 37.5 | 29.3 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.8 | 0.3 | 698.4 | 2.0 | 0.2 | | | 50.2 | |
| Delay (s) | | | | 45.5 | 27.1 | 735.9 | 21.3 | 22.1 | | | 87.2 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.1 | | | 22.0 | | | 87.2 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.5 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 92 | 0 | 0 | 0 | 0 | 849 | 662 | 286 | 529 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 95 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 545 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1009 | 0 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 545 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.12 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.20 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.46 | 1.06 | 0.42 | |
| Incremental Delay, d2 | 3.7 | 23.4 | | | | | | 0.4 | 78.3 | 2.2 | 0.1 | |
| Delay (s) | 32.4 | 58.5 | | | | | | 15.7 | 96.0 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.5 | | | 0.0 | | | 50.9 | | | 15.5 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.6 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|-------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | | ↰ | ↱ | | | ↱ | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 166 | 0 | 0 | 115 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 782 | 1882 | | | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 184 | 0 | 0 | 128 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 184 | 0 | 0 | 130 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | 501 | 1107 | | | 1061 | |
| v/s Ratio Prot | | | | | 0.00 | | 0.00 | c0.10 | | | 0.07 | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | 0.01 | 0.17 | | | 0.12 | |
| Uniform Delay, d1 | | | | 23.4 | 19.9 | | 10.0 | 8.0 | | | 9.6 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.06 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | 0.0 | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.7 | 19.9 | | 10.6 | 9.8 | | | 9.8 | |
| Level of Service | | | | C | B | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 26.0 | | | 9.8 | | | 9.8 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 143 | 42 | 33 | 300 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1686 | | 1005 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 151 | 44 | 35 | 316 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 183 | 0 | 35 | 316 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 640 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.4 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.92 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.8 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 16 | 10 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.52 | 1.16 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.2 | 5.4 | 8.9 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.9 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 23 | 274 | 14 | 568 | 253 | 0 | 0 | 193 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3738 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.57 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3738 | | 1002 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 304 | 16 | 631 | 281 | 0 | 0 | 214 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 342 | 0 | 631 | 281 | 0 | 0 | 214 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 679 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.93 | 0.27 | | | 0.30 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.0 | 8.1 | | | 15.0 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 21.0 | 0.6 | | | 1.1 | 0.1 |
| Delay (s) | | | | | 23.2 | | 38.0 | 8.7 | | | 16.1 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 29.0 | | | 15.6 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

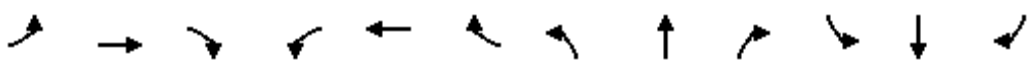
1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 15 | 11 | 9 | 331 | 528 | 97 | 74 | 340 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.97 | | 1.00 | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1803 | | 1692 | 3236 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1803 | | 892 | 3236 | | 564 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 17 | 12 | 10 | 368 | 587 | 108 | 82 | 378 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 32 | 0 | 368 | 675 | 0 | 82 | 388 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 553 | | 562 | 1467 | | 415 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.06 | | 0.65 | 0.46 | | 0.20 | 0.26 | |
| Uniform Delay, d1 | | | | | 18.4 | | 13.8 | 14.2 | | 12.4 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.4 | 0.9 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.6 | | 14.9 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.6 | | | 12.6 | | | 13.1 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 10.0 | | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 677 | 12 | 69 | 271 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.57 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 955 | 3232 | | 574 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 713 | 13 | 73 | 285 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 724 | 0 | 73 | 296 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 535 | 1810 | | 321 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.09 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.4 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.18 | 0.07 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.1 | 0.8 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 9.9 | | | 1.2 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.9% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 326 | 195 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 362 | 217 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 237 | 241 | 144 | 93 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 628 | 653 | 684 | 641 | 660 | |
| Control Delay (s) | 9.3 | 10.1 | 9.6 | 8.7 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 336 | 13 | 6 | 482 | 39 | 40 | 42 | 53 | 720 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3290 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 971 | 1731 | 1487 | | | 700 | 3290 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 373 | 14 | 7 | 536 | 43 | 44 | 47 | 59 | 800 | 50 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 31 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 373 | 7 | 7 | 536 | 56 | 0 | 0 | 106 | 845 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 296 | 528 | 453 | | | 167 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.22 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.45 | 0.01 | 0.02 | 1.02 | 0.12 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.3 | 18.4 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.8 | 0.0 | 0.1 | 43.0 | 0.6 | | | 17.0 | 55.9 | |
| Delay (s) | | 24.2 | 20.2 | 14.5 | 25.7 | 79.5 | 26.9 | | | 52.9 | 95.9 | |
| Level of Service | | C | C | B | C | E | C | | | D | F | |
| Approach Delay (s) | | | 20.9 | | | 71.7 | | | | | 91.1 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.9 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 54 | 300 | 27 | 33 | 4 | 64 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 333 | 30 | 37 | 4 | 71 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 60 | 392 | 0 | 0 | 0 | 75 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.20 | | | | | | c0.05 | |
| v/c Ratio | 0.88 | 0.51 | | | | 0.26 | 0.31 | |
| Uniform Delay, d1 | 38.9 | 35.1 | | | | 38.1 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 79.4 | 2.4 | | | | 2.2 | 1.8 | |
| Delay (s) | 118.3 | 37.5 | | | | 40.4 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 48.0 | | | | 40.3 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 497 | 0 | 0 | 492 | 27 | 118 | 116 | 123 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1929 | | | 1769 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1598 | | | 1929 | | | 1769 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 552 | 0 | 0 | 547 | 30 | 131 | 129 | 137 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 579 | 0 | 0 | 577 | 0 | 0 | 397 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 762 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.76 | | | 0.63 | | | 0.56 | | | | |
| Uniform Delay, d1 | | 13.9 | | | 12.7 | | | 15.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.0 | | | 3.2 | | | 3.2 | | | | |
| Delay (s) | | 21.0 | | | 15.9 | | | 18.3 | | | | |
| Level of Service | | C | | | B | | | B | | | | |
| Approach Delay (s) | | 21.0 | | | 15.9 | | | 18.3 | | | 0.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 76.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 398 | 114 | 67 | 276 | 116 | 148 | 1707 | 130 | 92 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1924 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.65 | 1.00 | | 0.54 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1265 | 1426 | | 1040 | 1396 | 631 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 419 | 120 | 71 | 291 | 122 | 156 | 1797 | 137 | 97 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 0 | 72 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 541 | 49 | 0 | 362 | 50 | 156 | 1797 | 107 | 97 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 52.7 | 44.0 | 44.0 | 49.3 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.50 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 518 | 584 | | 426 | 572 | 389 | 1299 | 538 | 152 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.04 | 0.16 | |
| v/s Ratio Perm | | c0.43 | 0.03 | | 0.35 | 0.04 | 0.17 | | 0.08 | 0.26 | | 0.03 |
| v/c Ratio | | 1.04 | 0.08 | | 0.85 | 0.09 | 0.40 | 1.38 | 0.20 | 0.64 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 31.0 | 19.0 | | 28.1 | 19.0 | 14.9 | 30.5 | 19.3 | 23.3 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.25 | 0.75 | 0.39 |
| Incremental Delay, d2 | | 51.6 | 0.3 | | 18.7 | 0.3 | 0.7 | 177.4 | 0.8 | 8.2 | 0.9 | 0.3 |
| Delay (s) | | 82.6 | 19.2 | | 46.8 | 19.3 | 15.6 | 207.9 | 20.2 | 37.4 | 17.7 | 7.9 |
| Level of Service | | F | B | | D | B | B | F | C | D | B | A |
| Approach Delay (s) | | 71.1 | | | 39.9 | | | 181.2 | | | 19.2 | |
| Approach LOS | | E | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 117.4 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.17 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 116.6% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















UPRR Right-of-Way Option Alternative Mitigated (2030) AM Peak
SP

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 558 | 59 | 51 | 421 | 50 | 67 | 62 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1630 | | | 1628 | | | 1775 | | | | |
| Flt Permitted | | 0.92 | | | 0.89 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1501 | | | 1455 | | | 1775 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 620 | 66 | 57 | 468 | 56 | 74 | 69 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 25 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 747 | 0 | 0 | 575 | 0 | 0 | 182 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 878 | | | 851 | | | 519 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.50 | | | 0.40 | | | 0.10 | | | | |
| v/c Ratio | | 0.85 | | | 0.68 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 11.2 | | | 9.3 | | | 18.1 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 10.1 | | | 4.3 | | | 1.9 | | | | |
| Delay (s) | | 21.3 | | | 13.6 | | | 20.0 | | | | |
| Level of Service | | C | | | B | | | C | | | | |
| Approach Delay (s) | | 21.3 | | | 13.6 | | | 20.0 | | | 0.0 | |
| Approach LOS | | C | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 66.8% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰↱ | |
| Volume (vph) | 30 | 509 | 67 | 32 | 450 | 39 | 55 | 150 | 89 | 49 | 192 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1738 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1594 | 1255 | | 1555 | 1288 | | 1417 | 1490 | | 1608 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 32 | 536 | 71 | 34 | 474 | 41 | 58 | 158 | 94 | 52 | 202 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 15 | 0 | 0 | 64 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 568 | 41 | 0 | 508 | 26 | 0 | 216 | 30 | 0 | 299 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 914 | 720 | | 892 | 738 | | 453 | 477 | | 515 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.03 | | 0.33 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.62 | 0.06 | | 0.57 | 0.03 | | 0.48 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.6 | 7.1 | | 10.1 | 7.0 | | 20.5 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.2 | 0.1 | | 2.6 | 0.1 | | 3.6 | 0.3 | | 4.7 | |
| Delay (s) | | 13.8 | 7.2 | | 12.8 | 7.1 | | 24.0 | 18.0 | | 26.0 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.0 | | | 12.3 | | | 22.2 | | | 26.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |

Intersection Summary

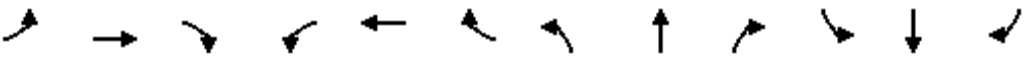










| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 16.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.61 | | |
| Actuated Cycle Length (s) | 75.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 95.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 440 | 30 | 17 | 326 | 39 | 55 | 303 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1464 | 2990 | | 1459 | 3535 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.50 | 1.00 | | 0.43 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 777 | 2990 | | 656 | 3535 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 489 | 33 | 19 | 362 | 43 | 61 | 337 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 14 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 93 | 515 | 0 | 19 | 391 | 0 | 61 | 337 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 371 | 1426 | | 313 | 1686 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.11 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.25 | 0.36 | | 0.06 | 0.23 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.1 | 10.7 | | 9.2 | 10.0 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.60 | 0.75 | 0.30 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.6 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.1 | 0.6 | 0.0 |
| Delay (s) | 11.7 | 11.5 | | 9.5 | 10.3 | | 8.0 | 13.7 | 3.7 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.5 | | | 10.3 | | | 12.0 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 98 | 416 | 85 | 44 | 291 | 65 | 73 | 371 | 44 | 57 | 143 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 3058 | | 1588 | 3012 | | 1541 | 3022 | | 1403 | 2767 | |
| Flt Permitted | 0.52 | 1.00 | | 0.42 | 1.00 | | 0.62 | 1.00 | | 0.46 | 1.00 | |
| Satd. Flow (perm) | 799 | 3058 | | 697 | 3012 | | 1007 | 3022 | | 678 | 2767 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 438 | 89 | 46 | 306 | 68 | 77 | 391 | 46 | 60 | 151 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 103 | 527 | 0 | 46 | 374 | 0 | 77 | 425 | 0 | 60 | 175 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 384 | 1468 | | 335 | 1446 | | 416 | 1249 | | 280 | 1144 | |
| v/s Ratio Prot | c0.17 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.13 | | | 0.07 | | | 0.08 | | | 0.09 | | |
| v/c Ratio | 0.27 | 0.36 | | 0.14 | 0.26 | | 0.19 | 0.34 | | 0.21 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.3 | | 10.9 | 11.6 | | 14.0 | 15.0 | | 14.2 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 0.9 | 0.4 | | 1.0 | 0.7 | | 1.7 | 0.3 | |
| Delay (s) | 13.3 | 12.9 | | 11.7 | 12.0 | | 15.0 | 15.8 | | 15.9 | 14.1 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 13.0 | | | 12.0 | | | 15.6 | | | 14.5 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 112 | 330 | 38 | 23 | 334 | 47 | 67 | 412 | 26 | 43 | 206 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1842 | | 1533 | 3073 | | 1372 | 2877 | |
| Flt Permitted | 0.44 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 709 | 1576 | | 711 | 1842 | | 940 | 3073 | | 597 | 2877 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 347 | 40 | 24 | 352 | 49 | 71 | 434 | 27 | 45 | 217 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 118 | 387 | 0 | 24 | 401 | 0 | 71 | 461 | 0 | 45 | 276 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 442 | 738 | | 358 | 793 | | 328 | 730 | | 193 | 630 | |
| v/s Ratio Prot | c0.02 | c0.25 | | 0.00 | 0.22 | | c0.01 | c0.15 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.27 | 0.52 | | 0.07 | 0.51 | | 0.22 | 0.63 | | 0.23 | 0.44 | |
| Uniform Delay, d1 | 13.8 | 15.9 | | 15.0 | 17.6 | | 21.6 | 29.1 | | 26.1 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.7 | | 0.1 | 2.3 | | 0.3 | 4.1 | | 0.6 | 2.2 | |
| Delay (s) | 14.1 | 18.6 | | 15.1 | 19.9 | | 21.9 | 33.2 | | 26.8 | 30.9 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.5 | | | 19.6 | | | 31.7 | | | 30.3 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 63.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 69 | 323 | 44 | 65 | 388 | 115 | 59 | 390 | 126 | 56 | 162 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2914 | | 1614 | 3156 | | 1581 | 2918 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2745 | | | 2468 | | 1041 | 3156 | | 628 | 2918 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 77 | 359 | 49 | 72 | 431 | 128 | 66 | 433 | 140 | 62 | 180 | 42 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 485 | 0 | 0 | 631 | 0 | 66 | 573 | 0 | 62 | 222 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1244 | | | 1119 | | 458 | 1389 | | 276 | 1284 | |
| v/s Ratio Prot | | | | | | | | c0.18 | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.26 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.14 | 0.41 | | 0.22 | 0.17 | |
| Uniform Delay, d1 | | 13.6 | | | 15.1 | | 12.6 | 14.4 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.1 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.5 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.5 | | | 17.1 | | | 15.1 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.9% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 523 | 5 | 14 | 661 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 581 | 3144 | | 720 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 581 | 6 | 16 | 734 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 586 | 0 | 16 | 734 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 378 | 2046 | | 468 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.23 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.43 | 0.29 | | 0.03 | 0.35 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.5 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.5 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.6 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 75 | 63 | 190 | 68 | 133 | 1972 | 88 | 71 | 499 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1499 | | 1547 | 1586 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.38 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 617 | 1499 | | 524 | 1586 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 79 | 66 | 200 | 72 | 140 | 2076 | 93 | 75 | 525 | 44 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 117 | 289 | 0 | 66 | 256 | 0 | 140 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 254 | 388 | | 232 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 28.9 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.61 | 0.71 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.9 | 12.3 | | 3.1 | 7.0 | | 2.8 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.4 | 41.2 | | 24.9 | 34.9 | | 10.9 | 309.7 | 8.1 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | C | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.6 | | | 32.9 | | | 279.4 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.5 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 218 | 17 | 15 | 149 | 18 | 18 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1850 | | | 1836 | | | 1902 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1792 | | | 1790 | | | 1856 | | | 1823 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 18 | 15 | 154 | 19 | 19 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 266 | 0 | 0 | 182 | 0 | 0 | 210 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 744 | | | 744 | | | 857 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.36 | | | 0.24 | | | 0.24 | | | 0.24 | |
| Uniform Delay, d1 | | 13.0 | | | 12.4 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.04 | | | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 0.8 | | | 0.6 | | | 0.7 | |
| Delay (s) | | 14.4 | | | 8.7 | | | 11.7 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.4 | | | 8.7 | | | 11.7 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 44 | 384 | 33 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 49 | 427 | 37 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 49 | 454 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.6 | | 5.7 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.75 | 0.74 | | 0.94 | 1.00 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.9 | 13.5 | | 12.6 | 13.4 | | 5.7 | 6.9 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.4 | | | 13.3 | | | 6.8 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.1 | HCM Level of Service | | | | | A | | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 40.7% | ICU Level of Service | | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 13 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1807 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1839 | | | 1749 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 14 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 207 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 834 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.02 | 0.93 | | 0.86 | 0.87 | | | 0.92 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.1 | 12.0 | | 10.5 | 11.0 | | | 14.1 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.2 | | | 11.0 | | | 14.1 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 59.6% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 90 | 127 | 60 | 2 | 84 | 36 | 21 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1879 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.57 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1879 | | 950 | 1870 | | | 1928 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 67 | 2 | 93 | 40 | 23 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 208 | 0 | 2 | 133 | 0 | 0 | 339 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 578 | | 292 | 575 | | | 1097 | | | 1091 | |
| v/s Ratio Prot | | c0.11 | | | 0.07 | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.36 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.5 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.91 | 0.90 | | 0.89 | 0.92 | | | 0.99 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.7 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.5 | 17.5 | | 14.0 | 16.4 | | | 7.9 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 17.5 | | | 16.3 | | | 7.9 | | | 7.4 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.46 | 2.42 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.32 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.1 | 42.0 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.8 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  | |
| Volume (vph) | 0 | 240 | 76 | 124 | 376 | 0 | 0 | 0 | 0 | 74 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2826 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.50 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2826 | | 848 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 253 | 80 | 131 | 396 | 0 | 0 | 0 | 0 | 78 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 303 | 0 | 131 | 396 | 0 | 0 | 0 | 0 | 78 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 933 | | 653 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | 0.05 | c0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.32 | | 0.20 | 0.20 | | | | | 0.15 | 0.52 | |
| Uniform Delay, d1 | | 25.1 | | 10.6 | 9.6 | | | | | 24.3 | 27.8 | |
| Progression Factor | | 1.00 | | 1.95 | 2.06 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.1 | | 21.2 | 19.8 | | | | | 25.0 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.1 | | | 20.2 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 185 | 0 | 0 | 326 | 69 | 174 | 554 | 332 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.34 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 599 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 195 | 0 | 0 | 343 | 73 | 183 | 583 | 349 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 234 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 195 | 0 | 0 | 398 | 0 | 183 | 583 | 115 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 678 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.06 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.08 | | | |
| v/c Ratio | 0.20 | 0.11 | | | 0.67 | | 0.32 | 0.99 | 0.23 | | | |
| Uniform Delay, d1 | 11.8 | 9.4 | | | 36.3 | | 25.1 | 33.4 | 24.3 | | | |
| Progression Factor | 0.25 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.91 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.9 | | 0.9 | 27.8 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.2 | | 19.8 | 54.1 | 47.1 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.2 | | | 46.3 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 463 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 4 | 216 | 196 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3108 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3108 | | 279 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 482 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 225 | 204 |
| RTOR Reduction (vph) | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 0 | 725 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 4 | 225 | 69 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1119 | | 391 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.65 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.7 | | 12.5 | 10.9 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.79 | 0.92 |
| Incremental Delay, d2 | | 2.9 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.5 |
| Delay (s) | | 29.6 | | 7.0 | 7.6 | | | | | 16.0 | 18.8 | 21.5 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.6 | | | 7.6 | | | 0.0 | | | 20.1 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 407 | 60 | 0 | 0 | 57 | 5 | 569 | 646 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3041 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1084 | 2338 | | | 3079 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 420 | 62 | 0 | 0 | 59 | 5 | 587 | 666 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 210 | 272 | 0 | 0 | 60 | 0 | 587 | 666 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1445 | | | 462 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.31 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.0 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.23 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.8 | 0.2 | | | 0.6 | | 42.9 | 66.6 | 0.2 | | | |
| Delay (s) | 4.1 | 3.5 | | | 37.4 | | 74.4 | 98.1 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.8 | | | 37.4 | | | 83.8 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.5 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  |  |  |  |  |
| Volume (vph) | 163 | 289 | 70 | 67 | 191 | 116 | 43 | 1151 | 97 | 96 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.98 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2843 | | | 2772 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.66 | | | 0.78 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1909 | | | 2178 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 301 | 73 | 70 | 199 | 121 | 45 | 1199 | 101 | 100 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 61 | 0 | 0 | 0 | 38 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 530 | 0 | 0 | 329 | 0 | 45 | 1199 | 63 | 100 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 874 | | | 717 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.21 | | | c0.15 | | 0.06 | | 0.05 | 0.26 | | 0.01 |
| v/c Ratio | | 0.61 | | | 0.46 | | 0.15 | 0.99 | 0.12 | 0.69 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 19.0 | | | 22.5 | | 14.7 | 25.6 | 16.7 | 19.1 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.32 | 0.87 | 1.41 | 1.83 | 1.64 | 3.16 |
| Incremental Delay, d2 | | 3.1 | | | 2.1 | | 0.6 | 17.5 | 0.3 | 22.2 | 1.0 | 0.1 |
| Delay (s) | | 22.1 | | | 24.6 | | 20.1 | 39.9 | 23.8 | 57.2 | 31.8 | 51.1 |
| Level of Service | | C | | | C | | C | D | C | E | C | D |
| Approach Delay (s) | | 22.1 | | | 24.6 | | | 38.0 | | | 37.1 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 81.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 467 | 0 | 0 | 346 | 82 | 28 | 63 | 101 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1707 | | | 1670 | | | 1581 | | | | |
| Flt Permitted | | 0.94 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1604 | | | 1670 | | | 1581 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 519 | 0 | 0 | 384 | 91 | 31 | 70 | 112 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 61 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 568 | 0 | 0 | 462 | 0 | 0 | 152 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 839 | | | 874 | | | 559 | | | | |
| v/s Ratio Prot | | | | | 0.28 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.68 | | | 0.53 | | | 0.27 | | | | |
| Uniform Delay, d1 | | 11.4 | | | 10.2 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.66 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 4.4 | | | 1.8 | | | 1.2 | | | | |
| Delay (s) | | 15.8 | | | 8.5 | | | 16.2 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 15.8 | | | 8.5 | | | 16.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 74.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 45 | 418 | 34 | 20 | 425 | 49 | 26 | 175 | 35 | 51 | 107 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1843 | | | 3185 | | | 3148 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.91 | | | 0.83 | |
| Satd. Flow (perm) | | 1759 | | | 1795 | | | 2928 | | | 2639 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 464 | 38 | 22 | 472 | 54 | 29 | 194 | 39 | 57 | 119 | 23 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 548 | 0 | 0 | 542 | 0 | 0 | 240 | 0 | 0 | 186 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 812 | | | 828 | | | 1216 | | | 1096 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.30 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.67 | | | 0.65 | | | 0.20 | | | 0.17 | |
| Uniform Delay, d1 | | 13.7 | | | 13.5 | | | 12.1 | | | 11.9 | |
| Progression Factor | | 0.67 | | | 0.55 | | | 0.86 | | | 0.55 | |
| Incremental Delay, d2 | | 3.5 | | | 3.9 | | | 0.4 | | | 0.3 | |
| Delay (s) | | 12.7 | | | 11.3 | | | 10.8 | | | 6.9 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 12.7 | | | 11.3 | | | 10.8 | | | 6.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 11.2 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.45 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 81.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 281 | 23 | 28 | 347 | 61 | 55 | 319 | 89 | 48 | 96 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2933 | | 1584 | 2945 | | 1497 | 3034 | | 1594 | 2899 | |
| Flt Permitted | 0.43 | 1.00 | | 0.53 | 1.00 | | 0.66 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 684 | 2933 | | 884 | 2945 | | 1046 | 3034 | | 809 | 2899 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 58 | 312 | 26 | 31 | 386 | 68 | 61 | 354 | 99 | 53 | 107 | 32 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 58 | 329 | 0 | 31 | 432 | 0 | 61 | 414 | 0 | 53 | 124 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 232 | 993 | | 299 | 997 | | 563 | 1634 | | 436 | 1561 | |
| v/s Ratio Prot | | 0.11 | | | c0.15 | | | c0.14 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.04 | | | 0.06 | | | 0.07 | | |
| v/c Ratio | 0.25 | 0.33 | | 0.10 | 0.43 | | 0.11 | 0.25 | | 0.12 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 16.0 | | 14.7 | 16.7 | | 7.4 | 8.0 | | 7.4 | 7.2 | |
| Progression Factor | 0.58 | 0.55 | | 0.76 | 0.79 | | 0.70 | 0.75 | | 1.30 | 1.35 | |
| Incremental Delay, d2 | 2.1 | 0.7 | | 0.7 | 1.3 | | 0.4 | 0.4 | | 0.6 | 0.1 | |
| Delay (s) | 11.0 | 9.6 | | 11.9 | 14.4 | | 5.5 | 6.3 | | 10.2 | 9.8 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.3 | | | 6.2 | | | 9.9 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.32 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 393 | 28 | 37 | 371 | 82 | 20 | 308 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1385 | 3013 | | 1335 | 3540 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 665 | 3013 | | 672 | 3540 | | | 3226 | | | 2808 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 88 | 414 | 29 | 39 | 391 | 86 | 21 | 324 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 29 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 88 | 435 | 0 | 39 | 448 | 0 | 0 | 375 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 317 | 1437 | | 320 | 1688 | | | 1290 | | | 1123 | |
| v/s Ratio Prot | | c0.14 | | | 0.13 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.28 | 0.30 | | 0.12 | 0.27 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.4 | | 9.4 | 10.2 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.59 | 1.64 | | 0.78 | 0.77 | | | 0.23 | | | 0.64 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.7 | 0.3 | | | 0.5 | | | 0.3 | |
| Delay (s) | 18.5 | 17.6 | | 8.1 | 8.1 | | | 3.6 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.7 | | | 8.1 | | | 3.6 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 99 | 303 | 100 | 104 | 357 | 104 | 88 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3034 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.79 | | | 0.78 | |
| Satd. Flow (perm) | | 1227 | 1409 | | 2325 | | | 1456 | | | 1442 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 337 | 111 | 116 | 397 | 116 | 98 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 30 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 447 | 58 | 0 | 599 | 0 | 0 | 261 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 642 | 737 | | 1216 | | | 470 | | | 466 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.04 | | 0.26 | | | c0.18 | | | 0.18 | |
| v/c Ratio | | 0.70 | 0.08 | | 0.49 | | | 0.55 | | | 0.55 | |
| Uniform Delay, d1 | | 11.6 | 7.7 | | 10.0 | | | 18.1 | | | 18.1 | |
| Progression Factor | | 2.00 | 5.72 | | 0.42 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.0 | 0.2 | | 1.4 | | | 4.7 | | | 4.6 | |
| Delay (s) | | 29.3 | 44.3 | | 5.6 | | | 22.8 | | | 22.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 32.3 | | | 5.6 | | | 22.8 | | | 22.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 72.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 74 | 384 | 21 | 15 | 442 | 63 | 37 | 103 | 41 | 43 | 90 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1573 | 3002 | | | 3454 | | | 3403 | |
| Flt Permitted | 0.39 | 1.00 | | 0.46 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 606 | 3018 | | 768 | 3002 | | | 3030 | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 82 | 427 | 23 | 17 | 491 | 70 | 41 | 114 | 46 | 48 | 100 | 109 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 17 | 0 | 0 | 25 | 0 | 0 | 60 | 0 |
| Lane Group Flow (vph) | 82 | 444 | 0 | 17 | 544 | 0 | 0 | 176 | 0 | 0 | 197 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 261 | 1300 | | 331 | 1293 | | | 1352 | | | 1345 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.31 | 0.34 | | 0.05 | 0.42 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.3 | | 10.8 | 12.9 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.97 | 1.00 | | 1.15 | 0.99 | | | 1.05 | | | 0.80 | |
| Incremental Delay, d2 | 2.4 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.1 | 12.9 | | 12.5 | 13.2 | | | 11.3 | | | 8.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.0 | | | 13.2 | | | 11.3 | | | 8.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 456 | 73 | 94 | 464 | 284 | 48 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3075 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2018 | | | 2281 | | | 2771 | | | 2008 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 507 | 81 | 104 | 516 | 316 | 53 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 99 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 668 | 0 | 0 | 837 | 0 | 0 | 491 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 807 | | | 912 | | | 1271 | | | 618 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.37 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.83 | | | 0.92 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.5 | | | 18.5 | | | 12.0 | | | 20.3 | |
| Progression Factor | | 1.74 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 9.4 | | | 15.5 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 39.8 | | | 34.0 | | | 12.9 | | | 26.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 39.8 | | | 34.0 | | | 12.9 | | | 26.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 29.9 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.83 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 88.6% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 724 | 119 | 45 | 759 | 0 | 137 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3032 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2543 | | | 1310 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 804 | 132 | 50 | 843 | 0 | 152 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 918 | 0 | 0 | 893 | 0 | 0 | 209 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.16 | | | | | |
| v/c Ratio | 0.48 | | | 0.96 | | | 0.90 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.8 | | | 36.2 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.9 | | | 37.6 | | | | | |
| Delay (s) | 0.7 | | | 62.5 | | | 73.8 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.7 | | | 62.5 | | | 73.8 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.7 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.81 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.7% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 188 | 274 | 646 | 183 | 103 | 20 | 185 | 78 | 7 | 77 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1756 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 508 | 3020 | | 339 | 3257 | 1457 | | 1581 | | 690 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 209 | 304 | 718 | 203 | 114 | 22 | 206 | 87 | 8 | 86 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 74 | 0 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 137 | 725 | 0 | 304 | 718 | 99 | 0 | 268 | 0 | 87 | 8 | 40 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Effective Green, g (s) | 40.0 | 30.6 | | 47.6 | 35.2 | 43.8 | | 20.8 | | 32.4 | 32.4 | 41.8 |
| Actuated g/C Ratio | 0.44 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 331 | 1027 | | 380 | 1274 | 709 | | 365 | | 338 | 617 | 677 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.71 | | 0.80 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.8 | | 14.8 | 21.4 | 12.7 | | 32.0 | | 21.2 | 18.5 | 13.3 |
| Progression Factor | 1.91 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.7 | | 12.0 | 1.8 | 0.1 | | 8.0 | | 0.4 | 0.0 | 0.1 |
| Delay (s) | 30.5 | 44.5 | | 26.8 | 23.2 | 12.8 | | 40.0 | | 21.6 | 18.5 | 13.3 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.3 | | | 22.4 | | | 40.0 | | | 17.5 | |
| Approach LOS | | D | | | C | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 74.5% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | | | | | |
| Volume (veh/h) | 0 | 518 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 | | | | | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | | | | | |
| Hourly flow rate (vph) | 0 | 576 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 | | | | | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 | | | | | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 | | | | | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | | | | | |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 | | | | | | | | | | | |
| cM capacity (veh/h) | 961 | | | 973 | | | 19 | 184 | 700 | 231 | 184 | 692 | | | | | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | | | | | |
| Volume Total | 288 | 288 | 274 | 203 | 393 | 36 | 636 | | | | | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 973 | 1700 | 231 | 692 | | | | | | | | | | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | E | | | | | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 40.6 | | | | | | | | | | | | | | | | |
| Approach LOS | | | | | | E | | | | | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | | | | | |
| Average Delay | 12.9 | | | | | | | | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 59.7% | | | ICU Level of Service | | | | | B | | | | | | | | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 550 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 611 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 306 | 306 | 597 | | | |
| Volume Left (vph) | 306 | 306 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 513 | 513 | 618 | | | |
| Control Delay (s) | 18.3 | 18.3 | 49.2 | | | |
| Approach Delay (s) | 18.3 | | 49.2 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 353 | 46 | 127 | 326 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3094 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.44 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3094 | | 730 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 392 | 51 | 141 | 362 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 431 | 0 | 141 | 362 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | | Split | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1310 | | 520 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.14 | | c0.03 | 0.11 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.12 | | | | | | | | |
| v/c Ratio | | 0.33 | | 0.27 | 0.20 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.4 | | 11.5 | 8.6 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.27 | 0.24 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.7 | | 1.2 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.1 | | 4.4 | 2.3 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.1 | | | 2.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.23 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 34.2% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 357 | 0 | 0 | 404 | 76 | 49 | 65 | 45 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3074 | | | 4413 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 650 | 3257 | | | 3074 | | | 4413 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 397 | 0 | 0 | 449 | 84 | 54 | 72 | 50 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 397 | 0 | 0 | 515 | 0 | 0 | 142 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 482 | 1839 | | | 1266 | | | 1402 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.03 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.22 | | | 0.41 | | | 0.10 | | | | |
| Uniform Delay, d1 | 12.2 | 9.2 | | | 17.7 | | | 20.4 | | | | |
| Progression Factor | 0.33 | 0.32 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.3 | | | 1.0 | | | 0.1 | | | | |
| Delay (s) | 4.6 | 3.2 | | | 18.6 | | | 20.6 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 3.5 | | | 18.6 | | | 20.6 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 34.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 323 | 39 | 34 | 247 | 31 | 118 | 85 | 61 | 58 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2982 | | | 2979 | | | 1787 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.87 | | | 0.75 | | | 0.88 | |
| Satd. Flow (perm) | | 2664 | | | 2613 | | | 1378 | | | 1560 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 359 | 43 | 38 | 274 | 34 | 131 | 94 | 68 | 64 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 13 | 0 | 0 | 17 | 0 | 0 | 47 | 0 |
| Lane Group Flow (vph) | 0 | 433 | 0 | 0 | 333 | 0 | 0 | 276 | 0 | 0 | 258 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 943 | | | 925 | | | 678 | | | 768 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.16 | | | 0.13 | | | c0.20 | | | 0.17 | |
| v/c Ratio | | 0.46 | | | 0.36 | | | 0.41 | | | 0.34 | |
| Uniform Delay, d1 | | 16.2 | | | 15.6 | | | 10.5 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.6 | | | 1.1 | | | 1.8 | | | 1.2 | |
| Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 17.8 | | | 16.6 | | | 12.3 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.43 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 63.7% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 196 | 202 | 39 | 50 | 176 | 62 | 71 | 1009 | 70 | 75 | 430 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 3005 | | 1592 | 3512 | | 1486 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.43 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 3005 | | 975 | 3512 | | 673 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 206 | 213 | 41 | 53 | 185 | 65 | 75 | 1062 | 74 | 79 | 453 | 92 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 41 | 0 | 0 | 0 | 43 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 206 | 235 | 0 | 53 | 209 | 0 | 75 | 1062 | 31 | 79 | 453 | 36 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 990 | | 373 | 1157 | | 323 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | c0.03 | 0.08 | | 0.01 | 0.06 | | 0.01 | c0.35 | | c0.03 | 0.15 | |
| v/s Ratio Perm | c0.17 | | | 0.04 | | | 0.09 | | 0.02 | 0.21 | | 0.03 |
| v/c Ratio | 0.56 | 0.24 | | 0.14 | 0.18 | | 0.23 | 0.90 | 0.06 | 0.55 | 0.39 | 0.07 |
| Uniform Delay, d1 | 21.3 | 20.7 | | 18.4 | 20.3 | | 15.0 | 24.4 | 16.3 | 17.5 | 18.7 | 16.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 2.00 | 0.61 | 0.80 |
| Incremental Delay, d2 | 6.2 | 0.6 | | 0.8 | 0.3 | | 1.7 | 11.0 | 0.2 | 12.9 | 0.9 | 0.3 |
| Delay (s) | 27.5 | 21.3 | | 19.2 | 20.7 | | 16.7 | 35.5 | 16.5 | 47.9 | 12.3 | 13.4 |
| Level of Service | C | C | | B | C | | B | D | B | D | B | B |
| Approach Delay (s) | | 24.1 | | | 20.4 | | | 33.1 | | | 16.9 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.2 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 40 | 256 | 18 | 14 | 216 | 8 | 35 | 121 | 25 | 20 | 59 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1929 | 1382 | | 1950 | 1331 | | 1973 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.94 | 1.00 | | 0.98 | 1.00 | | 0.94 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1823 | 1382 | | 1910 | 1331 | | 1866 | 1452 | | 1811 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 42 | 269 | 19 | 15 | 227 | 8 | 37 | 127 | 26 | 21 | 62 | 44 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 0 | 311 | 9 | 0 | 242 | 4 | 0 | 164 | 11 | 0 | 83 | 18 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 841 | 638 | | 882 | 614 | | 775 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | 0.01 | | 0.13 | 0.00 | | c0.09 | 0.01 | | 0.05 | 0.01 |
| v/c Ratio | | 0.37 | 0.01 | | 0.27 | 0.01 | | 0.21 | 0.02 | | 0.11 | 0.03 |
| Uniform Delay, d1 | | 11.4 | 9.5 | | 10.8 | 9.4 | | 12.2 | 11.2 | | 11.6 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.47 | 0.37 | | 1.12 | 1.39 | | 0.95 | 0.86 |
| Incremental Delay, d2 | | 1.3 | 0.0 | | 0.8 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.1 |
| Delay (s) | | 12.6 | 9.5 | | 5.8 | 3.5 | | 14.2 | 15.6 | | 11.3 | 9.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | A |
| Approach Delay (s) | | 12.4 | | | 5.7 | | | 14.4 | | | 10.8 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 66 | 285 | 10 | 17 | 211 | 34 | 13 | 247 | 35 | 47 | 70 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3025 | | 1520 | 2976 | | 1520 | 2983 | | 1520 | 2904 | |
| Flt Permitted | 0.95 | 1.00 | | 0.55 | 1.00 | | 0.68 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3025 | | 886 | 2976 | | 1091 | 2983 | | 871 | 2904 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 317 | 11 | 19 | 234 | 38 | 14 | 274 | 39 | 52 | 78 | 33 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 20 | 0 | 0 | 17 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 73 | 324 | 0 | 19 | 252 | 0 | 14 | 296 | 0 | 52 | 92 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1489 | | 300 | 1007 | | 453 | 1239 | | 362 | 1206 | |
| v/s Ratio Prot | c0.05 | 0.11 | | | c0.08 | | | c0.10 | | | 0.03 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.06 | | |
| v/c Ratio | 0.45 | 0.22 | | 0.06 | 0.25 | | 0.03 | 0.24 | | 0.14 | 0.08 | |
| Uniform Delay, d1 | 27.2 | 9.4 | | 14.5 | 15.5 | | 11.3 | 12.3 | | 11.8 | 11.5 | |
| Progression Factor | 0.85 | 0.48 | | 1.01 | 1.00 | | 0.45 | 0.45 | | 1.15 | 1.16 | |
| Incremental Delay, d2 | 8.3 | 0.3 | | 0.4 | 0.6 | | 0.1 | 0.3 | | 0.8 | 0.1 | |
| Delay (s) | 31.5 | 4.9 | | 15.1 | 16.2 | | 5.1 | 5.8 | | 14.4 | 13.4 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 9.7 | | | 16.1 | | | 5.8 | | | 13.7 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 37 | 253 | 85 | 242 | 216 | 43 | 43 | 297 | 56 | 25 | 185 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.97 | | | 0.98 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 2926 | | 1520 | 2964 | | | 3171 | | | 3188 | |
| Flt Permitted | 0.58 | 1.00 | | 0.95 | 1.00 | | | 0.89 | | | 0.88 | |
| Satd. Flow (perm) | 921 | 2926 | | 1520 | 2964 | | | 2842 | | | 2834 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 41 | 281 | 94 | 269 | 240 | 48 | 48 | 330 | 62 | 28 | 206 | 28 |
| RTOR Reduction (vph) | 0 | 51 | 0 | 0 | 21 | 0 | 0 | 20 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 41 | 324 | 0 | 269 | 267 | 0 | 0 | 420 | 0 | 0 | 248 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 15.0 | 15.0 | | 19.0 | 37.0 | | | 17.0 | | | 17.0 | |
| Effective Green, g (s) | 15.0 | 15.0 | | 19.0 | 37.0 | | | 17.0 | | | 17.0 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | 0.29 | 0.57 | | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 213 | 675 | | 444 | 1687 | | | 743 | | | 741 | |
| v/s Ratio Prot | c0.11 | | | c0.18 | | | 0.09 | | | | | |
| v/s Ratio Perm | 0.04 | | | | | | c0.15 | | | 0.09 | | |
| v/c Ratio | 0.19 | 0.48 | | 0.61 | 0.16 | | | 0.57 | | | 0.33 | |
| Uniform Delay, d1 | 20.1 | 21.6 | | 19.8 | 6.6 | | | 20.8 | | | 19.4 | |
| Progression Factor | 0.64 | 0.60 | | 1.47 | 1.29 | | | 1.03 | | | 0.76 | |
| Incremental Delay, d2 | 2.0 | 2.4 | | 4.4 | 0.1 | | | 1.5 | | | 1.2 | |
| Delay (s) | 14.8 | 15.3 | | 33.4 | 8.7 | | | 23.0 | | | 16.0 | |
| Level of Service | B | B | | C | A | | | C | | | B | |
| Approach Delay (s) | 15.2 | | | 20.6 | | | 23.0 | | | 16.0 | | |
| Approach LOS | B | | | C | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 56.6% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 298 | 14 | 70 | 466 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1587 | | | 1566 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1535 | | | 1451 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 331 | 16 | 78 | 518 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 363 | 0 | 0 | 668 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 989 | | | 935 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.24 | | | 0.46 | | | 0.06 | | | | |
| v/c Ratio | | 0.37 | | | 0.71 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.4 | | | 7.6 | | | 20.3 | | | | |
| Progression Factor | | 2.77 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 4.6 | | | 0.8 | | | | |
| Delay (s) | | 15.8 | | | 12.3 | | | 21.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 15.8 | | | 12.3 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

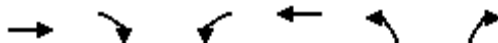


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (veh/h) | 96 | 364 | 469 | 44 | 66 | 134 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 101 | 383 | 494 | 46 | 69 | 141 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 561 | | | | 937 | 294 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 561 | | | | 937 | 294 |
| tC, single (s) | 4.3 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 70 | 80 |
| cM capacity (veh/h) | 927 | | | | 230 | 690 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | SB 1 | SB 2 |
| Volume Total | 229 | 255 | 329 | 211 | 69 | 141 |
| Volume Left | 101 | 0 | 0 | 0 | 69 | 0 |
| Volume Right | 0 | 0 | 0 | 46 | 0 | 141 |
| cSH | 927 | 1700 | 1700 | 1700 | 230 | 690 |
| Volume to Capacity | 0.11 | 0.15 | 0.19 | 0.12 | 0.30 | 0.20 |
| Queue Length 95th (ft) | 9 | 0 | 0 | 0 | 31 | 19 |
| Control Delay (s) | 4.8 | 0.0 | 0.0 | 0.0 | 27.3 | 11.6 |
| Lane LOS | A | | | | D | B |
| Approach Delay (s) | 2.2 | | 0.0 | | 16.7 | |
| Approach LOS | | | | | C | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.7 | | | |
| Intersection Capacity Utilization | | | 43.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | ➡ | | | ➡ | ➡ | |
| Volume (vph) | 472 | 1 | 27 | 675 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1663 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 524 | 1 | 30 | 750 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 525 | 0 | 0 | 780 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 73.0 | | | 43.0 | | |
| Effective Green, g (s) | 69.0 | | | 43.0 | | |
| Actuated g/C Ratio | 0.77 | | | 0.48 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1314 | | | 795 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.47 | | |
| v/c Ratio | 0.40 | | | 0.98 | | |
| Uniform Delay, d1 | 3.5 | | | 23.1 | | |
| Progression Factor | 0.03 | | | 1.00 | | |
| Incremental Delay, d2 | 0.5 | | | 27.7 | | |
| Delay (s) | 0.6 | | | 50.8 | | |
| Level of Service | A | | | D | | |
| Approach Delay (s) | 0.6 | | | 50.8 | 0.0 | |
| Approach LOS | A | | | D | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.6 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.75 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 20.0 |
| Intersection Capacity Utilization | | | 63.9% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013




| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 184 | 193 | 25 | 561 | 0 | 0 | 0 | 0 | 3 | 0 | 263 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 204 | 214 | 28 | 623 | 0 | 0 | 0 | 0 | 3 | 0 | 292 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 623 | | | 204 | | | 991 | 991 | 209 | 781 | 883 | 623 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 623 | | | 204 | | | 991 | 991 | 209 | 781 | 883 | 623 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 31 |
| cM capacity (veh/h) | 968 | | | 985 | | | 62 | 241 | 803 | 282 | 279 | 424 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 136 | 283 | 651 | 3 | 292 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 214 | 0 | 0 | 292 | | | | | | | |
| cSH | 1700 | 1700 | 985 | 282 | 424 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.69 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 127 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.9 | 30.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 30.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.9% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 187 | 0 | 586 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 208 | 0 | 651 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 651 | | | |
| Volume Left (vph) | 104 | 104 | 651 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.88 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 32.1 | | | |
| Approach Delay (s) | 10.3 | | 32.1 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 26.8 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 564 | 210 | 168 | 497 | 0 | 0 | 0 | 0 | 132 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.93 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3693 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 594 | 221 | 177 | 523 | 0 | 0 | 0 | 0 | 139 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 142 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 113 | 94 |
| Lane Group Flow (vph) | 0 | 594 | 79 | 0 | 700 | 0 | 0 | 0 | 0 | 76 | 231 | 64 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 31.0 | 31.0 | | 62.6 | | | | | 19.5 | 19.5 | 56.5 |
| Effective Green, g (s) | | 31.0 | 31.0 | | 62.6 | | | | | 19.5 | 19.5 | 56.5 |
| Actuated g/C Ratio | | 0.22 | 0.22 | | 0.45 | | | | | 0.14 | 0.14 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 659 | 266 | | 1508 | | | | | 187 | 514 | 453 |
| v/s Ratio Prot | | c0.20 | | | c0.21 | | | | | 0.06 | c0.06 | |
| v/s Ratio Perm | | | 0.07 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.90 | 0.30 | | 0.46 | | | | | 0.41 | 0.45 | 0.14 |
| Uniform Delay, d1 | | 53.0 | 45.4 | | 27.0 | | | | | 55.0 | 55.3 | 26.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 17.8 | 2.8 | | 0.1 | | | | | 1.4 | 0.6 | 0.1 |
| Delay (s) | | 70.8 | 48.3 | | 0.6 | | | | | 56.4 | 56.0 | 26.5 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 64.7 | | | 0.6 | | | 0.0 | | | 48.0 | |
| Approach LOS | | E | | | A | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 38.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | | Sum of lost time (s) | | | 28.9 | | | |
| Intersection Capacity Utilization | | | 56.8% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 484 | 0 | 0 | 427 | 93 | 238 | 150 | 178 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.93 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2975 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2975 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 538 | 0 | 0 | 474 | 103 | 264 | 167 | 198 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 85 | 0 | 117 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 538 | 0 | 0 | 474 | 18 | 216 | 296 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | 10 | | | | | | | |
| Actuated Green, G (s) | 69.4 | 69.4 | | | 24.7 | 24.7 | 19.9 | 19.9 | | | | |
| Effective Green, g (s) | 69.4 | 69.4 | | | 24.7 | 24.7 | 19.9 | 19.9 | | | | |
| Actuated g/C Ratio | 0.50 | 0.50 | | | 0.18 | 0.18 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 780 | 1669 | | | 556 | 257 | 218 | 423 | | | | |
| v/s Ratio Prot | 0.15 | c0.16 | | | c0.15 | | c0.14 | 0.10 | | | | |
| v/s Ratio Perm | | | | | 0.01 | | | | | | | |
| v/c Ratio | 0.30 | 0.32 | | | 0.85 | 0.07 | 0.99 | 0.70 | | | | |
| Uniform Delay, d1 | 20.9 | 21.2 | | | 55.9 | 48.1 | 60.0 | 57.2 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 12.0 | 0.1 | 58.2 | 5.2 | | | | |
| Delay (s) | 1.7 | 1.6 | | | 67.9 | 48.2 | 118.1 | 62.4 | | | | |
| Level of Service | A | A | | | E | D | F | E | | | | |
| Approach Delay (s) | | 1.6 | | | 64.4 | | | 81.5 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 45.3 | | | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | 0.56 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 140.0 | | | | Sum of lost time (s) | | | | 28.0 | | | |
| Intersection Capacity Utilization | 51.7% | | | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 452 | 75 | 56 | 186 | 54 | 88 | 824 | 148 | 93 | 448 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1538 | 1556 | 1327 | 1596 | 1724 | | 1525 | 2931 | | 1509 | 2870 | |
| Flt Permitted | 0.46 | 1.00 | 1.00 | 0.20 | 1.00 | | 0.34 | 1.00 | | 0.12 | 1.00 | |
| Satd. Flow (perm) | 749 | 1556 | 1327 | 340 | 1724 | | 542 | 2931 | | 192 | 2870 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 476 | 79 | 59 | 196 | 57 | 93 | 867 | 156 | 98 | 472 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 12 | 0 | 0 | 16 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 232 | 476 | 26 | 59 | 241 | 0 | 93 | 1007 | 0 | 98 | 559 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 340 | 527 | 435 | 182 | 536 | | 277 | 1118 | | 147 | 1095 | |
| v/s Ratio Prot | c0.05 | c0.31 | | 0.02 | 0.14 | | 0.02 | c0.34 | | c0.03 | 0.19 | |
| v/s Ratio Perm | 0.22 | | 0.02 | 0.10 | | | 0.12 | | | 0.25 | | |
| v/c Ratio | 0.68 | 0.90 | 0.06 | 0.32 | 0.45 | | 0.34 | 0.90 | | 0.67 | 0.51 | |
| Uniform Delay, d1 | 22.7 | 28.2 | 20.6 | 21.1 | 24.7 | | 16.3 | 26.1 | | 18.8 | 21.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.6 | 21.4 | 0.3 | 1.0 | 2.7 | | 0.7 | 11.6 | | 10.9 | 1.7 | |
| Delay (s) | 28.3 | 49.5 | 20.9 | 22.1 | 27.4 | | 17.0 | 37.6 | | 29.6 | 22.9 | |
| Level of Service | C | D | C | C | C | | B | D | | C | C | |
| Approach Delay (s) | | 40.4 | | | 26.4 | | | 35.9 | | | 23.9 | |
| Approach LOS | | D | | | C | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.84 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013




















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|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 44 | 568 | 16 | 26 | 257 | 28 | 35 | 80 | 102 | 45 | 44 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.94 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 1908 | 1482 | | 1599 | 1198 | | 1812 | | | 1823 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.93 | 1.00 | | 0.95 | | | 0.86 | |
| Satd. Flow (perm) | | 1844 | 1482 | | 1499 | 1198 | | 1732 | | | 1604 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 46 | 598 | 17 | 27 | 271 | 29 | 37 | 84 | 107 | 47 | 46 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 15 | 0 | 49 | 0 | 0 | 24 | 0 |
| Lane Group Flow (vph) | 0 | 644 | 11 | 0 | 298 | 14 | 0 | 179 | 0 | 0 | 110 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 908 | 730 | | 738 | 590 | | 719 | | | 666 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.01 | | 0.20 | 0.01 | | c0.10 | | | 0.07 | |
| v/c Ratio | | 0.71 | 0.01 | | 0.40 | 0.02 | | 0.25 | | | 0.17 | |
| Uniform Delay, d1 | | 12.9 | 8.4 | | 10.5 | 8.5 | | 12.4 | | | 11.9 | |
| Progression Factor | | 1.00 | 1.00 | | 0.67 | 0.46 | | 1.00 | | | 1.37 | |
| Incremental Delay, d2 | | 4.7 | 0.0 | | 1.6 | 0.1 | | 0.8 | | | 0.5 | |
| Delay (s) | | 17.5 | 8.5 | | 8.5 | 4.0 | | 13.2 | | | 16.8 | |
| Level of Service | | B | A | | A | A | | B | | | B | |
| Approach Delay (s) | | 17.3 | | | 8.1 | | | 13.2 | | | 16.8 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 74.6% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 75 | 627 | 24 | 27 | 238 | 8 | 41 | 228 | 108 | 18 | 53 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1657 | 1407 | | 1581 | 1503 | | 1754 | 1366 | | 1651 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.91 | 1.00 | | 0.94 | 1.00 | | 0.91 | |
| Satd. Flow (perm) | | 1557 | 1407 | | 1447 | 1503 | | 1655 | 1366 | | 1520 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 79 | 660 | 25 | 28 | 251 | 8 | 43 | 240 | 114 | 19 | 56 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 0 | 3 | 0 | 0 | 67 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 739 | 17 | 0 | 279 | 5 | 0 | 283 | 47 | 0 | 84 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 39.0 | 39.0 | | 16.0 | 16.0 | | 16.0 | |
| Effective Green, g (s) | | 39.0 | 39.0 | | 39.0 | 39.0 | | 16.0 | 16.0 | | 16.0 | |
| Actuated g/C Ratio | | 0.60 | 0.60 | | 0.60 | 0.60 | | 0.25 | 0.25 | | 0.25 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 934 | 844 | | 868 | 902 | | 407 | 336 | | 374 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.47 | 0.01 | | 0.19 | 0.00 | | c0.17 | 0.03 | | 0.06 | |
| v/c Ratio | | 0.79 | 0.02 | | 0.32 | 0.01 | | 0.70 | 0.14 | | 0.22 | |
| Uniform Delay, d1 | | 9.9 | 5.3 | | 6.4 | 5.2 | | 22.3 | 19.1 | | 19.5 | |
| Progression Factor | | 2.05 | 2.13 | | 0.96 | 0.82 | | 1.00 | 1.00 | | 0.68 | |
| Incremental Delay, d2 | | 5.5 | 0.0 | | 0.9 | 0.0 | | 9.4 | 0.9 | | 1.4 | |
| Delay (s) | | 25.7 | 11.2 | | 7.0 | 4.3 | | 31.7 | 20.0 | | 14.6 | |
| Level of Service | | C | B | | A | A | | C | B | | B | |
| Approach Delay (s) | | 25.3 | | | 7.0 | | | 28.4 | | | 14.6 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.9 | | | | HCM Level of Service | | | | C | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 88.5% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 676 | 21 | 31 | 9 | 18 | 15 | 26 | 363 | 19 | 9 | 220 | 226 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.98 | | | 1.00 | | | 1.00 | 0.92 |
| Flpb, ped/bikes | | 0.99 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.95 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.95 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1763 | 1398 | | 1778 | | | 1976 | | | 1873 | 1296 |
| Flt Permitted | | 0.72 | 1.00 | | 0.90 | | | 0.97 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1323 | 1398 | | 1610 | | | 1926 | | | 1851 | 1296 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 751 | 23 | 34 | 10 | 20 | 17 | 29 | 403 | 21 | 10 | 244 | 251 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 9 | 0 | 0 | 3 | 0 | 0 | 0 | 178 |
| Lane Group Flow (vph) | 0 | 774 | 24 | 0 | 38 | 0 | 0 | 450 | 0 | 0 | 254 | 73 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 32.0 | | | 19.0 | | | 19.0 | 19.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 32.0 | | | 19.0 | | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.49 | | | 0.29 | | | 0.29 | 0.29 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 855 | 860 | | 793 | | | 563 | | | 541 | 379 |
| v/s Ratio Prot | | c0.08 | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | 0.02 | | 0.02 | | | c0.23 | | | 0.14 | 0.06 |
| v/c Ratio | | 0.91 | 0.03 | | 0.05 | | | 0.80 | | | 0.47 | 0.19 |
| Uniform Delay, d1 | | 10.9 | 4.9 | | 8.6 | | | 21.2 | | | 18.9 | 17.3 |
| Progression Factor | | 0.59 | 1.03 | | 1.00 | | | 1.00 | | | 1.19 | 2.16 |
| Incremental Delay, d2 | | 11.3 | 0.0 | | 0.1 | | | 11.3 | | | 2.6 | 1.0 |
| Delay (s) | | 17.7 | 5.1 | | 8.7 | | | 32.6 | | | 25.0 | 38.2 |
| Level of Service | | B | A | | A | | | C | | | C | D |
| Approach Delay (s) | | 17.2 | | | 8.7 | | | 32.6 | | | 31.6 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.8 | | | | HCM Level of Service | | | | C | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 93.7% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013























| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 989 | 222 | 274 | 1130 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.13 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 214 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1041 | 234 | 288 | 1189 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 56 |
| Lane Group Flow (vph) | 0 | 1238 | 0 | 288 | 1189 | 0 | 0 | 0 | 0 | 234 | 397 | 154 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 38.9 | | 57.4 | 57.4 | | | | | 20.6 | 20.6 | 20.6 |
| Effective Green, g (s) | | 38.9 | | 57.4 | 57.4 | | | | | 20.6 | 20.6 | 20.6 |
| Actuated g/C Ratio | | 0.43 | | 0.64 | 0.64 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1868 | | 350 | 2057 | | | | | 325 | 621 | 310 |
| v/s Ratio Prot | | 0.29 | | c0.13 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.40 | | | | | | c0.16 | 0.15 | 0.11 |
| v/c Ratio | | 0.66 | | 0.82 | 0.58 | | | | | 0.72 | 0.64 | 0.50 |
| Uniform Delay, d1 | | 20.3 | | 17.9 | 9.4 | | | | | 32.0 | 31.4 | 30.2 |
| Progression Factor | | 1.00 | | 1.50 | 0.23 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.9 | | 8.0 | 0.6 | | | | | 7.7 | 2.4 | 1.5 |
| Delay (s) | | 22.2 | | 35.0 | 2.8 | | | | | 39.7 | 33.7 | 31.7 |
| Level of Service | | C | | C | A | | | | | D | C | C |
| Approach Delay (s) | | 22.2 | | | 9.1 | | | 0.0 | | | 34.8 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 105.5% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |   | | |   |  | |    | | | | |
| Volume (vph) | 311 | 953 | 0 | 0 | 855 | 234 | 549 | 365 | 484 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 3119 | 1449 | | 4390 | | | | |
| Flt Permitted | 0.19 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 595 | 3138 | | | 3119 | 1449 | | 4390 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 1003 | 0 | 0 | 900 | 246 | 578 | 384 | 509 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 139 | 0 | 51 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 1003 | 0 | 0 | 900 | 107 | 0 | 1420 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | Perm | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 45.5 | 45.5 | | | 32.0 | 32.0 | | 32.5 | | | | |
| Effective Green, g (s) | 45.5 | 45.5 | | | 32.0 | 32.0 | | 32.5 | | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.36 | 0.36 | | 0.36 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 494 | 1586 | | | 1109 | 515 | | 1585 | | | | |
| v/s Ratio Prot | 0.06 | c0.32 | | | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.28 | | | | | 0.07 | | 0.32 | | | | |
| v/c Ratio | 0.66 | 0.63 | | | 0.81 | 0.21 | | 0.90 | | | | |
| Uniform Delay, d1 | 27.4 | 16.2 | | | 26.3 | 20.2 | | 27.2 | | | | |
| Progression Factor | 0.59 | 0.53 | | | 0.47 | 0.28 | | 1.00 | | | | |
| Incremental Delay, d2 | 2.6 | 1.5 | | | 5.0 | 0.7 | | 7.5 | | | | |
| Delay (s) | 18.7 | 10.1 | | | 17.3 | 6.3 | | 34.6 | | | | |
| Level of Service | B | B | | | B | A | | C | | | | |
| Approach Delay (s) | | 12.2 | | | 14.9 | | | 34.6 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 105.5% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 105 | 743 | 226 | 78 | 796 | 44 | 226 | 178 | 40 | 57 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1564 | 3061 | 1293 | 1604 | 3233 | | 1447 | 3009 | | 1544 | 2783 | |
| Flt Permitted | 0.28 | 1.00 | 1.00 | 0.18 | 1.00 | | 0.51 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 463 | 3061 | 1293 | 309 | 3233 | | 775 | 3009 | | 990 | 2783 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 782 | 238 | 82 | 838 | 46 | 238 | 187 | 42 | 60 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 110 | 0 | 4 | 0 | 0 | 22 | 0 | 0 | 79 | 0 |
| Lane Group Flow (vph) | 111 | 782 | 128 | 82 | 880 | 0 | 238 | 207 | 0 | 60 | 134 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 38.9 | 36.4 | 48.5 | 33.9 | 33.9 | | 31.8 | 24.7 | | 19.8 | 16.2 | |
| Effective Green, g (s) | 38.9 | 36.4 | 48.5 | 33.9 | 33.9 | | 31.8 | 24.7 | | 19.8 | 16.2 | |
| Actuated g/C Ratio | 0.43 | 0.40 | 0.54 | 0.38 | 0.38 | | 0.35 | 0.27 | | 0.22 | 0.18 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 308 | 1238 | 697 | 207 | 1218 | | 364 | 826 | | 240 | 501 | |
| v/s Ratio Prot | 0.04 | c0.26 | 0.02 | 0.03 | c0.27 | | c0.09 | 0.07 | | 0.01 | 0.05 | |
| v/s Ratio Perm | 0.12 | | 0.07 | 0.12 | | | c0.14 | | | 0.05 | | |
| v/c Ratio | 0.36 | 0.63 | 0.18 | 0.40 | 0.72 | | 0.65 | 0.25 | | 0.25 | 0.27 | |
| Uniform Delay, d1 | 21.2 | 21.4 | 10.6 | 19.6 | 24.0 | | 22.6 | 25.4 | | 28.5 | 31.8 | |
| Progression Factor | 0.67 | 0.67 | 0.56 | 0.87 | 0.94 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.2 | 1.7 | 0.1 | 1.2 | 3.5 | | 4.2 | 0.6 | | 0.5 | 1.0 | |
| Delay (s) | 16.5 | 16.0 | 6.0 | 18.2 | 26.2 | | 26.8 | 26.0 | | 29.0 | 32.8 | |
| Level of Service | B | B | A | B | C | | C | C | | C | C | |
| Approach Delay (s) | | 14.0 | | | 25.6 | | | 26.4 | | | 32.0 | |
| Approach LOS | | B | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 9.5 | | | |
| Intersection Capacity Utilization | | | 73.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & Ashland Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 329 | 286 | 59 | 196 | 102 | 329 | 382 | 83 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2916 | | 1463 | 3036 | | 1589 | 3237 | | 1549 | 3135 | |
| Flt Permitted | 0.53 | 1.00 | | 0.24 | 1.00 | | 0.46 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 914 | 2916 | | 367 | 3036 | | 772 | 3237 | | 772 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 346 | 301 | 62 | 206 | 107 | 346 | 402 | 87 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 144 | 0 | 0 | 61 | 0 | 0 | 17 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 503 | 0 | 62 | 252 | 0 | 346 | 472 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.7 | 28.7 | | 35.9 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 359 | 797 | | 200 | 833 | | 530 | 1292 | | 338 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.02 | 0.08 | | c0.11 | 0.15 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.09 | | | c0.22 | | | 0.08 | | |
| v/c Ratio | 0.18 | 0.63 | | 0.31 | 0.30 | | 0.65 | 0.36 | | 0.28 | 0.33 | |
| Uniform Delay, d1 | 23.8 | 33.5 | | 24.5 | 30.2 | | 16.6 | 22.2 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 3.8 | | 1.0 | 0.9 | | 3.0 | 0.8 | | 0.5 | 1.0 | |
| Delay (s) | 24.1 | 37.3 | | 25.5 | 31.1 | | 19.6 | 23.0 | | 22.9 | 29.7 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 36.1 | | | 30.2 | | | 21.6 | | | 28.2 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.5 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | | | 72.0% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|-------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 169 | 716 | 81 | 6 | 457 | 113 | 68 | 602 | 7 | 104 | 326 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.99 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2929 | | | 2898 | | 1436 | 3186 | | 1451 | 2786 | |
| Flt Permitted | | 0.64 | | | 0.94 | | 0.33 | 1.00 | | 0.18 | 1.00 | |
| Satd. Flow (perm) | | 1882 | | | 2736 | | 506 | 3186 | | 274 | 2786 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 796 | 90 | 7 | 508 | 126 | 76 | 669 | 8 | 116 | 362 | 117 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 24 | 0 | 0 | 1 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 0 | 1067 | 0 | 0 | 617 | 0 | 76 | 676 | 0 | 116 | 444 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 51.0 | | | 43.0 | | 27.0 | 23.0 | | 27.0 | 23.0 | |
| Effective Green, g (s) | | 51.0 | | | 43.0 | | 27.0 | 23.0 | | 27.0 | 23.0 | |
| Actuated g/C Ratio | | 0.57 | | | 0.48 | | 0.30 | 0.26 | | 0.30 | 0.26 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1113 | | | 1307 | | 193 | 814 | | 135 | 712 | |
| v/s Ratio Prot | | c0.04 | | | | | 0.02 | 0.21 | | c0.04 | 0.16 | |
| v/s Ratio Perm | | c0.50 | | | 0.23 | | 0.10 | | | c0.22 | | |
| v/c Ratio | | 0.96 | | | 0.47 | | 0.39 | 0.83 | | 0.86 | 0.62 | |
| Uniform Delay, d1 | | 18.5 | | | 15.8 | | 23.6 | 31.7 | | 28.2 | 29.7 | |
| Progression Factor | | 0.55 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 17.4 | | | 1.2 | | 5.9 | 9.6 | | 46.8 | 4.1 | |
| Delay (s) | | 27.6 | | | 17.1 | | 29.5 | 41.3 | | 75.0 | 33.8 | |
| Level of Service | | C | | | B | | C | D | | E | C | |
| Approach Delay (s) | | 27.6 | | | 17.1 | | | 40.1 | | | 41.8 | |
| Approach LOS | | C | | | B | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 83.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 52 | 334 | 48 | 73 | 165 | 13 | 38 | 661 | 101 | 10 | 378 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1666 | 1916 | | 1618 | 1943 | | 1658 | 3200 | | 1139 | 3197 | |
| Flt Permitted | 0.64 | 1.00 | | 0.39 | 1.00 | | 0.50 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 1126 | 1916 | | 660 | 1943 | | 870 | 3200 | | 355 | 3197 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 344 | 49 | 75 | 170 | 13 | 39 | 681 | 104 | 10 | 390 | 46 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 19 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 54 | 385 | 0 | 75 | 179 | 0 | 39 | 766 | 0 | 10 | 422 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 416 | 707 | | 244 | 717 | | 415 | 1526 | | 169 | 1525 | |
| v/s Ratio Prot | c0.20 | | | 0.09 | | | c0.24 | | | 0.13 | | |
| v/s Ratio Perm | 0.05 | | | 0.11 | | | 0.04 | | | 0.03 | | |
| v/c Ratio | 0.13 | 0.54 | | 0.31 | 0.25 | | 0.09 | 0.50 | | 0.06 | 0.28 | |
| Uniform Delay, d1 | 13.6 | 16.2 | | 14.6 | 14.2 | | 9.3 | 11.7 | | 9.2 | 10.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.33 | 1.36 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.6 | 3.0 | | 2.2 | 0.6 | | 0.4 | 1.2 | | 0.7 | 0.5 | |
| Delay (s) | 14.2 | 19.2 | | 21.5 | 19.9 | | 9.8 | 12.9 | | 9.8 | 10.7 | |
| Level of Service | B | B | | C | B | | A | B | | A | B | |
| Approach Delay (s) | 18.6 | | | 20.4 | | | 12.7 | | | 10.7 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 14.6 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.52 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 68.9% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013

| | → | ↖ | ← | ↗ | ↖ | ← | ↑ | ↗ | ↘ | ↓ | ↖ | ↗ |
|---|------|------|--------|------|------|------|----------------------|------|------|-------|------|------|
| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
| Lane Configurations | ↔↔ | | ↔↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 761 | 200 | 621 | 17 | 3 | 14 | 3 | 47 | 30 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.98 | | |
| Flt Protected | 1.00 | | 0.99 | | | | 0.99 | | | 0.96 | | |
| Satd. Flow (prot) | 2956 | | 2954 | | | | 1732 | | | 1908 | | |
| Flt Permitted | 1.00 | | 0.51 | | | | 0.94 | | | 0.79 | | |
| Satd. Flow (perm) | 2956 | | 1535 | | | | 1643 | | | 1562 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 801 | 211 | 654 | 18 | 3 | 15 | 3 | 49 | 32 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 801 | 0 | 881 | 0 | 0 | 0 | 32 | 0 | 0 | 35 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | | Perm | Perm | | | Perm | | | |
| Protected Phases | 8 | | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 21.3 | | 42.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 21.3 | | 42.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.33 | | 0.65 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 969 | | 992 | | | | 354 | | | 336 | | |
| v/s Ratio Prot | 0.27 | | | | | | | | | | | |
| v/s Ratio Perm | | | c0.57 | | | | 0.02 | | | c0.02 | | |
| v/c Ratio | 0.83 | | 1.94dl | | | | 0.09 | | | 0.10 | | |
| Uniform Delay, d1 | 20.1 | | 9.5 | | | | 20.4 | | | 20.5 | | |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 8.0 | | 11.7 | | | | 0.5 | | | 0.6 | | |
| Delay (s) | 28.2 | | 21.2 | | | | 20.9 | | | 21.1 | | |
| Level of Service | C | | C | | | | C | | | C | | |
| Approach Delay (s) | 28.2 | | 21.2 | | | | 20.9 | | | 21.1 | | |
| Approach LOS | C | | C | | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.5 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 9.0 | | |
| Intersection Capacity Utilization | | | 72.0% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013

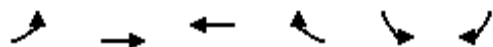


| | |
|------------------------|---------------|
| Movement | NER |
| Lane Configurations | TT |
| Volume (vph) | 461 |
| Ideal Flow (vphpl) | 1800 |
| Lane Width | 12 |
| Total Lost time (s) | 5.0 |
| Lane Util. Factor | 0.88 |
| Frpb, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 2470 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 2470 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 485 |
| RTOR Reduction (vph) | 0 |
| Lane Group Flow (vph) | 485 |
| Confl. Peds. (#/hr) | |
| Confl. Bikes (#/hr) | |
| Heavy Vehicles (%) | 9% |
| Turn Type | custom |
| Protected Phases | 7 |
| Permitted Phases | |
| Actuated Green, G (s) | 15.7 |
| Effective Green, g (s) | 15.7 |
| Actuated g/C Ratio | 0.24 |
| Clearance Time (s) | 5.0 |
| Lane Grp Cap (vph) | 597 |
| v/s Ratio Prot | 0.20 |
| v/s Ratio Perm | |
| v/c Ratio | 0.81 |
| Uniform Delay, d1 | 23.3 |
| Progression Factor | 0.85 |
| Incremental Delay, d2 | 10.2 |
| Delay (s) | 30.1 |
| Level of Service | C |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 194 | 1172 | 684 | 81 | 139 | 156 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3234 | 3205 | | 1629 | 1457 |
| Flt Permitted | | 0.66 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2146 | 3205 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 216 | 1302 | 760 | 90 | 154 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 144 |
| Lane Group Flow (vph) | 0 | 1518 | 840 | 0 | 154 | 29 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 67.0 | 67.0 | | 15.0 | 15.0 |
| Effective Green, g (s) | | 67.0 | 67.0 | | 15.0 | 15.0 |
| Actuated g/C Ratio | | 0.74 | 0.74 | | 0.17 | 0.17 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1598 | 2386 | | 272 | 243 |
| v/s Ratio Prot | | | 0.26 | | c0.09 | |
| v/s Ratio Perm | | c0.71 | | | | 0.02 |
| v/c Ratio | | 0.95 | 0.35 | | 0.57 | 0.12 |
| Uniform Delay, d1 | | 10.0 | 4.0 | | 34.5 | 31.9 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 13.4 | 0.4 | | 8.3 | 1.0 |
| Delay (s) | | 23.4 | 4.4 | | 42.8 | 32.9 |
| Level of Service | | C | A | | D | C |
| Approach Delay (s) | | 23.4 | 4.4 | | 37.5 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.1 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.88 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 81.0% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013














| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 53 | 1231 | 703 | 202 | 174 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2920 | | 1464 | 1373 |
| Flt Permitted | | 0.88 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2576 | 2920 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 1296 | 740 | 213 | 183 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 45 |
| Lane Group Flow (vph) | 0 | 1352 | 909 | 0 | 183 | 14 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 14.0 | 14.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 14.0 | 14.0 |
| Actuated g/C Ratio | | 0.63 | 0.63 | | 0.23 | 0.23 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1631 | 1849 | | 342 | 320 |
| v/s Ratio Prot | | | 0.31 | | c0.12 | |
| v/s Ratio Perm | | c0.52 | | | | 0.01 |
| v/c Ratio | | 0.83 | 0.49 | | 0.54 | 0.04 |
| Uniform Delay, d1 | | 8.5 | 5.9 | | 20.1 | 17.8 |
| Progression Factor | | 1.00 | 1.31 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.0 | 0.7 | | 5.9 | 0.3 |
| Delay (s) | | 13.5 | 8.4 | | 26.0 | 18.1 |
| Level of Service | | B | A | | C | B |
| Approach Delay (s) | | 13.5 | 8.4 | | 24.1 | |
| Approach LOS | | B | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 12.6 | | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | 0.75 | | | | |
| Actuated Cycle Length (s) | | 60.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 85.1% | | ICU Level of Service | | E |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Volume (vph) | 1257 | 160 | 161 | 663 | 423 | 438 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.98 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2248 | | 1771 | 2436 | 1844 | 1500 |
| Flt Permitted | 1.00 | | 0.05 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2248 | | 98 | 2436 | 1844 | 1500 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1283 | 163 | 164 | 677 | 432 | 447 |
| RTOR Reduction (vph) | 4 | 0 | 0 | 0 | 0 | 43 |
| Lane Group Flow (vph) | 1442 | 0 | 164 | 677 | 432 | 404 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | | | pm+pt | | | pt+ov |
| Protected Phases | 4 | | 3 | 8 | 2 | 2 3 |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 73.0 | | 83.0 | 83.0 | 27.0 | 39.0 |
| Effective Green, g (s) | 73.0 | | 83.0 | 83.0 | 27.0 | 39.0 |
| Actuated g/C Ratio | 0.61 | | 0.69 | 0.69 | 0.22 | 0.32 |
| Clearance Time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1368 | | 165 | 1685 | 415 | 488 |
| v/s Ratio Prot | c0.64 | | 0.06 | 0.28 | c0.23 | c0.27 |
| v/s Ratio Perm | | | 0.63 | | | |
| v/c Ratio | 1.05 | | 0.99 | 0.40 | 1.04 | 0.83 |
| Uniform Delay, d1 | 23.5 | | 40.4 | 7.9 | 46.5 | 37.4 |
| Progression Factor | 0.80 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 34.8 | | 68.5 | 0.7 | 55.2 | 14.8 |
| Delay (s) | 53.7 | | 108.9 | 8.6 | 101.7 | 52.2 |
| Level of Service | D | | F | A | F | D |
| Approach Delay (s) | 53.7 | | | 28.2 | 76.6 | |
| Approach LOS | D | | | C | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 53.3 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 1.03 | | | |
| Actuated Cycle Length (s) | | | 120.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 108.5% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 725 | 89 | 258 | 1516 | 9 | 72 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.14 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.70 | |
| Satd. Flow (perm) | 285 | 3213 | 1422 | 435 | 3138 | 1366 | | 1309 | 1443 | | 719 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 806 | 99 | 287 | 1684 | 10 | 80 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 48 | 0 | 0 | 2 | 0 | 0 | 182 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 806 | 51 | 287 | 1684 | 8 | 0 | 80 | 26 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 43.7 | 43.7 | 43.7 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Effective Green, g (s) | 43.7 | 43.7 | 43.7 | 66.4 | 66.4 | 66.4 | | 10.6 | 10.6 | | 10.6 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.78 | 0.78 | 0.78 | | 0.12 | 0.12 | | 0.12 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 147 | 1652 | 731 | 607 | 2451 | 1067 | | 163 | 180 | | 90 | |
| v/s Ratio Prot | | 0.25 | | 0.11 | c0.54 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.26 | | 0.01 | | c0.06 | 0.02 | | 0.00 | |
| v/c Ratio | 0.01 | 0.49 | 0.07 | 0.47 | 0.69 | 0.01 | | 0.49 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 10.1 | 13.4 | 10.4 | 4.1 | 4.4 | 2.0 | | 34.7 | 33.2 | | 32.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.1 | 1.0 | 0.2 | 0.6 | 0.8 | 0.0 | | 2.3 | 0.4 | | 0.0 | |
| Delay (s) | 10.2 | 14.4 | 10.6 | 4.7 | 5.2 | 2.1 | | 37.0 | 33.5 | | 32.7 | |
| Level of Service | B | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 14.0 | | | 5.1 | | | 34.5 | | | 32.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 7.0 | | | |
| Intersection Capacity Utilization | | | 62.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 819 | 851 | 45 | 24 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1482 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2834 | 3017 | | 1482 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 910 | 946 | 50 | 27 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 924 | 992 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1039 | 2145 | | 115 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.8 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.3 | 0.2 | | 4.9 | |
| Delay (s) | | 38.1 | 0.3 | | 44.0 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 38.1 | 0.3 | | 44.0 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 19.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 44.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 90 | 430 | 1 | 27 | 568 | 80 | 0 | 0 | 1 | 45 | 3 | 136 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1727 | | | 3232 | | | 1427 | | | 1606 | 1277 |
| Flt Permitted | | 0.77 | | | 0.92 | | | 1.00 | | | 0.90 | 1.00 |
| Satd. Flow (perm) | | 1343 | | | 2977 | | | 1427 | | | 1513 | 1277 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 478 | 1 | 30 | 631 | 89 | 0 | 0 | 1 | 50 | 3 | 151 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 107 |
| Lane Group Flow (vph) | 0 | 579 | 0 | 0 | 738 | 0 | 0 | 0 | 0 | 0 | 53 | 44 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | custom | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | 3 | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 43.0 | | | 56.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 43.0 | | | 56.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.48 | | | 0.62 | | | 0.10 | | | 0.26 | 0.29 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 642 | | | 1852 | | | 143 | | | 401 | 369 |
| v/s Ratio Prot | | | | | | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | c0.43 | | | c0.25 | | | | | | c0.01 | c0.03 |
| v/c Ratio | | 0.90 | | | 0.40 | | | 0.00 | | | 0.13 | 0.12 |
| Uniform Delay, d1 | | 21.6 | | | 8.5 | | | 36.5 | | | 25.8 | 23.6 |
| Progression Factor | | 1.00 | | | 0.14 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 18.2 | | | 0.2 | | | 0.0 | | | 0.7 | 0.7 |
| Delay (s) | | 39.8 | | | 1.4 | | | 36.5 | | | 26.5 | 24.2 |
| Level of Service | | D | | | A | | | D | | | C | C |
| Approach Delay (s) | | 39.8 | | | 1.4 | | | 36.5 | | | 24.8 | |
| Approach LOS | | D | | | A | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 73.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 93 | 0 | 0 | 122 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.2 | 19.1 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.6 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 41 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 43 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 24 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.08 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.1 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.33 | 0.75 | 1.24 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.6 | | 5.1 | 12.2 | 16.6 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.2 | | 0.0 | | | | 55.2 | |
| Approach LOS | | D | | | B | | A | | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013

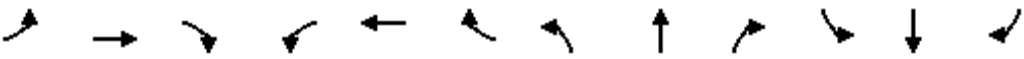
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 340 | 815 | 220 | 54 | 578 | 287 | 102 | 251 | 55 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 608 | 302 | 107 | 264 | 58 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 228 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1072 | 0 | 57 | 608 | 74 | 0 | 371 | 16 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.63 | | 0.54 | 0.79 | 0.30 | | 0.52 | 0.06 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 22.0 | | 59.2 | 45.8 | 39.8 | | 45.1 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.95 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.7 | 8.0 | 3.0 | | 2.7 | 0.4 | 49.7 | | 0.4 |
| Delay (s) | 30.7 | 4.7 | | 77.9 | 53.8 | 42.8 | | 45.3 | 40.6 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 51.8 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|--------|------|--------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | | ↑ | ↑ | ↑ | |
| Volume (vph) | 0 | 893 | 166 | 105 | 839 | 0 | 74 | 0 | 87 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 299 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 184 | 117 | 932 | 0 | 82 | 0 | 97 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1161 | 0 | 117 | 932 | 0 | 82 | 0 | 31 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 179 | 1889 | | 346 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | c0.39 | | | c0.08 | | 0.02 | | 0.01 | |
| v/c Ratio | | 0.65 | | 0.65 | 0.49 | | 0.24 | | 0.07 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 13.1 | | 13.2 | 11.4 | | 25.0 | | 23.6 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.8 | | 17.1 | 0.9 | | 1.6 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 14.9 | | 30.3 | 12.3 | | 26.6 | | 23.9 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.9 | | | 14.3 | | | 25.2 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|--------|-------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↰↰↰ | | | ↰↰↰ | |
| Volume (vph) | 0 | 0 | 0 | 301 | 0 | 1230 | 215 | 686 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.6 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.63 | 2.06 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.8 | | 848.6 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 40.4 | | 886.1 | 21.4 | 18.0 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 719.9 | | | 18.8 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 326.4 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 102.1% | | | ICU Level of Service | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 145 | 0 | 0 | 0 | 0 | 579 | 410 | 359 | 734 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3157 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 149 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 962 | 0 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.14 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.30 | | | | | | | c0.19 | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.51 | 0.71 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.5 | | | | | | 32.7 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.2 | | | | | | 1.6 | 6.9 | 4.8 | 0.1 | |
| Delay (s) | 35.5 | 51.7 | | | | | | 34.3 | 41.7 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | C | D | C | A | |
| Approach Delay (s) | | 47.9 | | | 0.0 | | | 37.4 | | | 12.8 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.2 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 102.1% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013




















| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|-------|-------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | | ↰ | ↱ | | | ↱ | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 164 | 0 | 0 | 149 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 974 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 182 | 0 | 0 | 166 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 182 | 0 | 0 | 171 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | | pm+pt | | | | |
| Protected Phases | | | | | 8 | | | 7 | 2 | | 6 | |
| Permitted Phases | | | | 8 | | | | 2 | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | | 50.0 | 50.0 | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | | 0.59 | 0.59 | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | | 4.0 | 4.0 | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | | 634 | 1086 | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | | 0.00 | c0.10 | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | | 0.01 | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | | 0.02 | 0.17 | | 0.16 | |
| Uniform Delay, d1 | | | | 24.5 | 20.0 | | | 10.5 | 8.0 | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | | 1.04 | 1.18 | | 1.00 | |
| Incremental Delay, d2 | | | | 4.9 | 0.1 | | | 0.1 | 0.3 | | 0.3 | |
| Delay (s) | | | | 29.4 | 20.1 | | | 11.0 | 9.7 | | 10.1 | |
| Level of Service | | | | C | C | | | B | A | | B | |
| Approach Delay (s) | | 0.0 | | | 28.0 | | | 9.8 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 6 | 0 | 14 | 0 | 149 | 45 | 46 | 393 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1571 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.96 | | | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 1515 | 1735 | | | 1529 | | | 1718 | | 987 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 6 | 0 | 15 | 0 | 157 | 47 | 48 | 414 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 11 | 0 | 0 | 191 | 0 | 48 | 414 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | | | | pm+pt | | | | | |
| Protected Phases | 4 | | 8 | | | | 2 | | 1 6 | | | |
| Permitted Phases | 4 | | 8 | | | | | | 6 | | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | 50.0 | | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | 50.0 | | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | 0.59 | | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | 481 | 551 | | | 486 | | | 808 | 630 | | 1094 | |
| v/s Ratio Prot | c0.01 | | | | | | 0.11 | | 0.01 | | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | 0.04 | | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.24 | 0.08 | | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.4 | 8.8 | | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 0.98 | | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.7 | 0.2 | | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.1 | 8.8 | | 9.0 | |
| Level of Service | C | C | | | C | | | B | A | | A | |
| Approach Delay (s) | 20.1 | | | | 20.0 | | 14.1 | | | | 9.0 | |
| Approach LOS | C | | | | C | | B | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 41.8% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 48 | 42 | 12 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1752 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1752 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 47 | 13 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 0 | 13 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.51 | 0.63 | 1.43 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.4 | 5.1 | 12.7 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 5.0 | 12.7 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 130 | 2 | 0 | 283 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1677 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.47 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 844 | 1677 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 144 | 2 | 0 | 314 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 146 | 0 | 0 | 314 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 606 | 1006 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.09 | | | 0.18 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.47 | 0.14 | | | 0.40 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 13.7 | 7.4 | | | 15.9 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.6 | 0.3 | | | 1.6 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.4 | 7.7 | | | 17.4 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.5 | | | 17.2 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 96 | 94 | 38 | 133 | 207 | 32 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3282 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3282 | | 1056 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 107 | 104 | 42 | 148 | 230 | 36 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 16 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 243 | 0 | 148 | 250 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1488 | | 638 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.08 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.17 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.83 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.0 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 277 | 24 | 159 | 590 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3173 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 599 | 3173 | | 1004 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 292 | 25 | 167 | 621 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 8 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 309 | 0 | 167 | 666 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 335 | 1777 | | 562 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.3 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 3.0 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 253 | 588 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 281 | 653 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 168 | 187 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.8 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.31 | 0.33 | 0.71 | 0.48 | |
| Capacity (veh/h) | 591 | 528 | 546 | 602 | 622 | |
| Control Delay (s) | 12.6 | 11.2 | 11.2 | 20.8 | 12.7 | |
| Approach Delay (s) | 12.6 | 11.2 | | 17.4 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 54.0% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 376 | 18 | 22 | 409 | 76 | 78 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.92 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1412 | | | 1710 | 3251 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.38 | 1.00 | 1.00 | | | 0.16 | 1.00 | |
| Satd. Flow (perm) | | 191 | 1731 | 1530 | 692 | 1731 | 1412 | | | 295 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 418 | 20 | 24 | 454 | 84 | 87 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 418 | 7 | 24 | 454 | 146 | 0 | 0 | 137 | 424 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 53.0 | 53.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 53.0 | 53.0 | |
| Actuated g/C Ratio | | 0.33 | 0.33 | 0.33 | 0.21 | 0.21 | 0.21 | | | 0.35 | 0.35 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 201 | 577 | 510 | 148 | 369 | 301 | | | 104 | 1149 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.26 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.09 | | 0.00 | 0.03 | | 0.10 | | | c0.46 | | |
| v/c Ratio | | 0.37 | 0.72 | 0.01 | 0.16 | 1.23 | 0.48 | | | 1.32 | 0.37 | |
| Uniform Delay, d1 | | 38.4 | 43.9 | 33.5 | 48.1 | 59.0 | 51.8 | | | 48.5 | 36.1 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 5.2 | 7.7 | 0.1 | 2.3 | 125.2 | 5.5 | | | 195.3 | 0.9 | |
| Delay (s) | | 43.7 | 51.7 | 33.5 | 50.4 | 184.2 | 57.3 | | | 243.8 | 37.0 | |
| Level of Service | | D | D | C | D | F | E | | | F | D | |
| Approach Delay (s) | | | 49.8 | | | 145.8 | | | | | 87.0 | |
| Approach LOS | | | D | | | F | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 123.5 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 103.9% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 108 | 571 | 82 | 103 | 4 | 114 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.41 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 732 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 120 | 634 | 91 | 114 | 4 | 127 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 120 | 831 | 0 | 0 | 0 | 131 | 875 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 52.5 | 52.5 | | | | 34.5 | 34.5 | |
| Effective Green, g (s) | 52.5 | 52.5 | | | | 34.5 | 34.5 | |
| Actuated g/C Ratio | 0.35 | 0.35 | | | | 0.23 | 0.23 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 256 | 1136 | | | | 393 | 606 | |
| v/s Ratio Prot | | 0.26 | | | | 0.08 | | |
| v/s Ratio Perm | 0.16 | | | | | | c0.33 | |
| v/c Ratio | 0.47 | 0.73 | | | | 0.33 | 1.44 | |
| Uniform Delay, d1 | 37.9 | 42.6 | | | | 48.2 | 57.8 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.1 | 4.2 | | | | 2.3 | 208.6 | |
| Delay (s) | 44.0 | 46.7 | | | | 50.4 | 266.4 | |
| Level of Service | D | D | | | | D | F | |
| Approach Delay (s) | | 46.4 | | | | 238.8 | | |
| Approach LOS | | D | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 601 | 0 | 0 | 493 | 60 | 85 | 52 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1951 | | | 1840 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1524 | | | 1951 | | | 1840 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 668 | 0 | 0 | 548 | 67 | 94 | 58 | 22 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 740 | 0 | 0 | 615 | 0 | 0 | 174 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 938 | | | 1201 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.32 | | | | | | | |
| v/s Ratio Perm | | 0.49 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.79 | | | 0.51 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.3 | | | 7.0 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.7 | | | 1.6 | | | 2.1 | | | | |
| Delay (s) | | 16.0 | | | 8.6 | | | 21.7 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 16.0 | | | 8.6 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 87.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 340 | 152 | 129 | 358 | 157 | 105 | 639 | 85 | 144 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.92 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1982 | 1441 | | 1949 | 1453 | 1546 | 3040 | 1280 | 1506 | 3069 | 1232 |
| Flt Permitted | | 0.61 | 1.00 | | 0.78 | 1.00 | 0.20 | 1.00 | 1.00 | 0.22 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1210 | 1441 | | 1537 | 1453 | 326 | 3040 | 1280 | 351 | 3069 | 1232 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 358 | 160 | 136 | 377 | 165 | 111 | 673 | 89 | 152 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 82 | 0 | 0 | 104 | 0 | 0 | 64 | 0 | 0 | 69 |
| Lane Group Flow (vph) | 0 | 433 | 78 | 0 | 513 | 61 | 111 | 673 | 25 | 152 | 799 | 30 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 26.0 | 26.0 | 24.0 | 20.0 | 20.0 | 26.0 | 21.0 | 21.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 26.0 | 26.0 | 24.0 | 20.0 | 20.0 | 26.0 | 21.0 | 21.0 |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.37 | 0.37 | 0.34 | 0.29 | 0.29 | 0.37 | 0.30 | 0.30 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 643 | 700 | | 571 | 540 | 181 | 869 | 366 | 213 | 921 | 370 |
| v/s Ratio Prot | | c0.05 | | | | | 0.03 | 0.22 | | c0.05 | c0.26 | |
| v/s Ratio Perm | | 0.28 | 0.05 | | c0.33 | 0.04 | 0.18 | | 0.02 | 0.21 | | 0.02 |
| v/c Ratio | | 0.67 | 0.11 | | 0.90 | 0.11 | 0.61 | 0.77 | 0.07 | 0.71 | 0.87 | 0.08 |
| Uniform Delay, d1 | | 13.8 | 9.8 | | 20.8 | 14.4 | 17.1 | 22.9 | 18.2 | 16.2 | 23.2 | 17.6 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.6 | 0.3 | | 19.5 | 0.4 | 6.0 | 6.7 | 0.4 | 10.8 | 10.8 | 0.4 |
| Delay (s) | | 19.3 | 10.1 | | 40.3 | 14.9 | 23.2 | 29.6 | 18.6 | 27.0 | 34.0 | 18.0 |
| Level of Service | | B | B | | D | B | C | C | B | C | C | B |
| Approach Delay (s) | | 16.8 | | | 34.1 | | | 27.7 | | | 31.5 | |
| Approach LOS | | B | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.3 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 70.0 | | | | Sum of lost time (s) | | | 14.0 | | |
| Intersection Capacity Utilization | | | 92.1% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 421 | 85 | 98 | 539 | 94 | 51 | 61 | 71 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1649 | | | 1797 | | | | |
| Flt Permitted | | 0.83 | | | 0.85 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1367 | | | 1417 | | | 1797 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 468 | 94 | 109 | 599 | 104 | 57 | 68 | 79 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 8 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 647 | 0 | 0 | 804 | 0 | 0 | 169 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 841 | | | 872 | | | 470 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.47 | | | 0.57 | | | 0.09 | | | | |
| v/c Ratio | | 0.77 | | | 0.92 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.1 | | | 11.1 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.7 | | | 16.6 | | | 2.1 | | | | |
| Delay (s) | | 15.8 | | | 27.7 | | | 21.7 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 15.8 | | | 27.7 | | | 21.7 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.3 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.75 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 72.2% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 53 | 496 | 83 | 76 | 527 | 37 | 38 | 76 | 72 | 54 | 238 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1685 | 1382 | | 1713 | 1417 | | 1686 | 1455 | | 1878 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.84 | 1.00 | | 0.82 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1504 | 1382 | | 1442 | 1417 | | 1412 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 522 | 87 | 80 | 555 | 39 | 40 | 80 | 76 | 57 | 251 | 59 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 578 | 50 | 0 | 635 | 27 | 0 | 120 | 24 | 0 | 357 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 862 | 792 | | 827 | 812 | | 452 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.38 | 0.04 | | 0.44 | 0.02 | | 0.08 | 0.02 | | 0.20 | |
| v/c Ratio | | 0.67 | 0.06 | | 0.77 | 0.03 | | 0.27 | 0.05 | | 0.63 | |
| Uniform Delay, d1 | | 11.1 | 7.1 | | 12.2 | 7.0 | | 18.9 | 17.6 | | 21.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 4.1 | 0.2 | | 6.8 | 0.1 | | 1.4 | 0.2 | | 5.2 | |
| Delay (s) | | 15.2 | 7.2 | | 19.0 | 7.0 | | 20.4 | 17.8 | | 26.9 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 14.2 | | | 18.3 | | | 19.4 | | | 26.9 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.72 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 101.5% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 494 | 34 | 45 | 539 | 54 | 45 | 165 | 55 | 123 | 210 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1533 | 3066 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.35 | 1.00 | | 0.39 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 562 | 3066 | | 675 | 3730 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 549 | 38 | 50 | 599 | 60 | 50 | 183 | 61 | 137 | 233 | 37 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 66 | 579 | 0 | 50 | 647 | 0 | 50 | 183 | 24 | 137 | 233 | 15 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 268 | 1462 | | 322 | 1779 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.19 | | | 0.17 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.07 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.25 | 0.40 | | 0.16 | 0.36 | | 0.13 | 0.28 | 0.04 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.1 | 11.0 | | 9.6 | 10.8 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.85 | 0.90 | 0.75 | 0.59 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.2 | 0.8 | | 1.0 | 0.6 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.3 | 11.8 | | 10.6 | 11.3 | | 11.1 | 12.9 | 9.1 | 9.9 | 9.4 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.8 | | | 11.3 | | | 11.8 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 421 | 81 | 73 | 396 | 67 | 57 | 180 | 64 | 89 | 245 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3137 | | 1520 | 3128 | | 1580 | 2919 | | 1452 | 2997 | |
| Flt Permitted | 0.44 | 1.00 | | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 617 | 3137 | | 667 | 3128 | | 882 | 2919 | | 907 | 2997 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 443 | 85 | 77 | 417 | 71 | 60 | 189 | 67 | 94 | 258 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 528 | 0 | 77 | 488 | 0 | 60 | 217 | 0 | 94 | 300 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 296 | 1506 | | 320 | 1501 | | 365 | 1207 | | 375 | 1239 | |
| v/s Ratio Prot | c0.17 | | | 0.16 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.12 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.35 | | 0.24 | 0.33 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.3 | 12.2 | | 11.5 | 12.0 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 1.8 | 0.6 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.9 | 12.8 | | 13.2 | 12.6 | | 14.8 | 14.3 | | 16.0 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.7 | | | 14.4 | | | 15.1 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 52.1% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 100 | 447 | 62 | 32 | 523 | 48 | 86 | 203 | 60 | 76 | 473 | 110 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1653 | | 1371 | 1973 | | 1534 | 2998 | | 1535 | 3012 | |
| Flt Permitted | 0.24 | 1.00 | | 0.30 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 402 | 1653 | | 435 | 1973 | | 451 | 2998 | | 939 | 3012 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 105 | 471 | 65 | 34 | 551 | 51 | 91 | 214 | 63 | 80 | 498 | 116 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 105 | 536 | 0 | 34 | 602 | 0 | 91 | 277 | 0 | 80 | 614 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 272 | 725 | | 241 | 829 | | 204 | 698 | | 329 | 702 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.31 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.18 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.39 | 0.74 | | 0.14 | 0.73 | | 0.45 | 0.40 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 23.8 | 19.8 | | 20.5 | 20.6 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | 6.7 | | 0.3 | 5.5 | | 1.6 | 1.7 | | 0.4 | 14.3 | |
| Delay (s) | 24.7 | 26.5 | | 20.8 | 26.1 | | 30.8 | 29.2 | | 22.2 | 45.7 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 26.2 | | | 25.8 | | | 29.6 | | | 43.0 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | | ↗ | ↕↕ | |
| Volume (vph) | 77 | 399 | 65 | 117 | 510 | 118 | 67 | 158 | 58 | 127 | 367 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3131 | | 1652 | 3237 | | 1549 | 3027 | |
| Flt Permitted | | 0.71 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2616 | | | 2271 | | 737 | 3237 | | 983 | 3027 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 86 | 443 | 72 | 130 | 567 | 131 | 74 | 176 | 64 | 141 | 408 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 601 | 0 | 0 | 828 | 0 | 74 | 240 | 0 | 141 | 499 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1186 | | | 1030 | | 324 | 1424 | | 433 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.23 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.51 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.37 | |
| Uniform Delay, d1 | | 14.5 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 6.7 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 16.1 | | | 24.3 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 16.1 | | | 24.3 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.4% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue

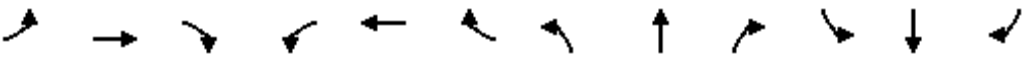










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  |  |
| Volume (vph) | 98 | 877 | 6 | 20 | 585 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 647 | 3206 | | 432 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 974 | 7 | 22 | 650 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 981 | 0 | 22 | 650 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | Perm | | | Perm | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 405 | 2008 | | 271 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | c0.31 | | | 0.20 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.9 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.3 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | 8.2 | | | 6.6 | | | 20.0 | | | 24.0 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.8 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 73.6 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 58.2% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 124 | 94 | 163 | 56 | 144 | 907 | 90 | 125 | 825 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1505 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.21 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1505 | | 340 | 1585 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 131 | 99 | 172 | 59 | 152 | 955 | 95 | 132 | 868 | 109 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 138 | 348 | 0 | 99 | 216 | 0 | 152 | 955 | 55 | 132 | 868 | 58 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 285 | 390 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.26 | | 0.04 | 0.25 | | 0.04 |
| v/c Ratio | 0.48 | 0.89 | | 0.52 | 0.53 | | 0.66 | 0.76 | 0.10 | 0.62 | 0.68 | 0.11 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.0 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.82 | 0.53 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.2 | | 9.9 | 4.8 | | 12.2 | 3.8 | 0.3 | 12.8 | 2.9 | 0.4 |
| Delay (s) | 28.4 | 55.5 | | 32.7 | 31.8 | | 22.0 | 21.3 | 8.5 | 27.8 | 23.4 | 15.8 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.2 | | | 32.1 | | | 20.4 | | | 23.1 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 73.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 35 | 20 | 173 | 21 | 25 | 149 | 40 | 47 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1839 | | | 1849 | | | 1939 | | | 1974 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | | 1783 | | | 1791 | | | 1837 | | | 1868 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 36 | 21 | 178 | 22 | 26 | 154 | 41 | 48 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 237 | 0 | 0 | 215 | 0 | 0 | 209 | 0 | 0 | 354 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 741 | | | 744 | | | 848 | | | 862 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.25 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.6 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.69 | | | 1.17 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 13.9 | | | 9.7 | | | 13.1 | | | 13.1 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 13.9 | | | 9.7 | | | 13.1 | | | 13.1 | |
| Approach LOS | | B | | | A | | | B | | | B | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 12.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.37 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 53.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 38 | 25 | 180 | 19 | 49 | 200 | 31 | 43 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3059 | | 1576 | 3119 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3059 | | 985 | 3119 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 42 | 28 | 200 | 21 | 54 | 222 | 34 | 48 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 54 | 242 | 0 | 48 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 912 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.94 | 0.97 | | 0.73 | 0.73 | | 1.36 | 1.37 | | 0.38 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.4 | 17.7 | | 12.9 | 13.3 | | 8.4 | 8.5 | | 2.5 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.6 | | | 13.3 | | | 8.4 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 41 | 25 | 159 | 38 | 27 | 247 | 16 | 40 | 322 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3058 | | 1525 | 2937 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3058 | | 974 | 2937 | | | 1823 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 46 | 28 | 177 | 42 | 30 | 274 | 18 | 44 | 358 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 205 | 0 | 28 | 194 | 0 | 0 | 319 | 0 | 0 | 434 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1223 | | 390 | 1175 | | | 869 | | | 878 | |
| v/s Ratio Prot | 0.07 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.17 | | | c0.24 | | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.37 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.05 | 1.00 | | 0.79 | 0.79 | | | 1.23 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.2 | 12.8 | | 9.9 | 10.2 | | | 14.4 | | | 13.6 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | 13.2 | | | 10.1 | | | 14.4 | | | 13.6 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 57.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 20 | 161 | 27 | 41 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1970 | | 1087 | 1975 | | | 1792 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 22 | 179 | 30 | 46 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 22 | 209 | 0 | 0 | 319 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 606 | | 334 | 608 | | | 1020 | | | 1088 | |
| v/s Ratio Prot | | 0.08 | | | c0.11 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.07 | 0.34 | | | 0.31 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.83 | 0.81 | | 0.96 | 0.99 | | | 0.84 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.8 | 14.6 | | 15.6 | 18.7 | | | 6.9 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.7 | | | 18.4 | | | 6.9 | | | 9.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.39 | 2.73 | | 1.00 | 1.00 | | 1.20 | 1.12 | 1.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.7 | 48.0 | | 17.1 | 17.1 | | 7.7 | 7.4 | 7.8 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.7 | | | 17.1 | | | 7.4 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  | |
| Volume (vph) | 0 | 253 | 163 | 178 | 204 | 0 | 0 | 0 | 0 | 110 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.41 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 722 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 266 | 172 | 187 | 215 | 0 | 0 | 0 | 0 | 116 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 187 | 215 | 0 | 0 | 0 | 0 | 116 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | | | D.P+P | | | | | | | | Split | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 566 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | c0.12 | | c0.06 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | 0.11 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.33 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.5 | 11.1 | | | | | 22.4 | 27.6 | |
| Progression Factor | | 1.00 | | 2.20 | 2.13 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.4 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.4 | | 31.0 | 23.8 | | | | | 23.3 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.4 | | | 27.1 | | | 0.0 | | | 30.2 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | |  |  |  | | | |
| Volume (vph) | 141 | 222 | 0 | 0 | 305 | 113 | 77 | 539 | 233 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1674 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.36 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 632 | 3196 | | | 2850 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 234 | 0 | 0 | 321 | 119 | 81 | 567 | 245 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 168 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 234 | 0 | 0 | 403 | 0 | 81 | 567 | 77 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 703 | 1974 | | | 726 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.21 | 0.12 | | | 0.55 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.3 | 8.0 | | | 33.0 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 3.0 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 4.9 | 3.6 | | | 36.0 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 36.0 | | | 73.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 514 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 11 | 434 | 285 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3098 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3098 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 535 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 297 |
| RTOR Reduction (vph) | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 196 |
| Lane Group Flow (vph) | 0 | 866 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 11 | 452 | 101 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1115 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.78 | | 0.22 | 0.29 | | | | | 0.02 | 0.42 | 0.19 |
| Uniform Delay, d1 | | 28.4 | | 14.4 | 10.6 | | | | | 21.9 | 25.4 | 23.3 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.3 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.8 |
| Delay (s) | | 33.8 | | 15.5 | 12.9 | | | | | 22.0 | 26.6 | 24.2 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.8 | | | 13.2 | | | 0.0 | | | 25.5 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 92.5% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

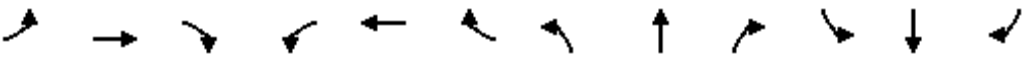
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 419 | 106 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3110 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2290 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 432 | 109 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 216 | 325 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1463 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.1 | 3.6 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.8 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 92.5% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 220 | 103 | 153 | 273 | 121 | 84 | 699 | 87 | 102 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2940 | | | 2929 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.72 | | | 0.72 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2137 | | | 2152 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 229 | 107 | 159 | 284 | 126 | 88 | 728 | 91 | 106 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 31 | 0 | 0 | 0 | 56 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 377 | 0 | 0 | 538 | 0 | 88 | 728 | 35 | 106 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 962 | | | 709 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.14 | | | c0.25 | | 0.20 | | 0.03 | 0.18 | | 0.03 |
| v/c Ratio | | 0.39 | | | 0.76 | | 0.53 | 0.60 | 0.07 | 0.48 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 16.9 | | | 25.5 | | 16.7 | 20.5 | 16.3 | 16.0 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.36 | 0.69 | 0.62 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.2 | | | 7.5 | | 10.7 | 2.1 | 0.2 | 5.2 | 3.1 | 0.2 |
| Delay (s) | | 18.1 | | | 33.0 | | 33.5 | 16.2 | 10.4 | 22.9 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 18.1 | | | 33.0 | | | 17.3 | | | 28.4 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 74.8% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 327 | 0 | 0 | 424 | 88 | 53 | 44 | 34 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1731 | | | 1707 | | | 1653 | | | | |
| Flt Permitted | | 0.83 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1453 | | | 1707 | | | 1653 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 363 | 0 | 0 | 471 | 98 | 59 | 49 | 38 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 447 | 0 | 0 | 557 | 0 | 0 | 126 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 849 | | | 998 | | | 483 | | | | |
| v/s Ratio Prot | | | | | c0.33 | | | | | | | |
| v/s Ratio Perm | | 0.31 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.53 | | | 0.56 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.1 | | | 8.3 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.76 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.3 | | | 2.0 | | | 1.3 | | | | |
| Delay (s) | | 10.4 | | | 8.3 | | | 18.9 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 10.4 | | | 8.3 | | | 18.9 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.5 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 21 | 384 | 39 | 39 | 370 | 50 | 31 | 118 | 39 | 53 | 150 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1955 | | | 1941 | | | 2969 | | | 2985 | |
| Flt Permitted | | 0.97 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1900 | | | 1825 | | | 2647 | | | 2591 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 23 | 427 | 43 | 43 | 411 | 56 | 34 | 131 | 43 | 59 | 167 | 48 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 0 | 488 | 0 | 0 | 503 | 0 | 0 | 183 | 0 | 0 | 247 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 877 | | | 842 | | | 1100 | | | 1076 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.28 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.56 | | | 0.60 | | | 0.17 | | | 0.23 | |
| Uniform Delay, d1 | | 12.7 | | | 13.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.61 | | | 0.40 | | | 1.07 | | | 0.43 | |
| Incremental Delay, d2 | | 2.4 | | | 2.8 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 10.1 | | | 8.0 | | | 13.1 | | | 5.8 | |
| Level of Service | | B | | | A | | | B | | | A | |
| Approach Delay (s) | | 10.1 | | | 8.0 | | | 13.1 | | | 5.8 | |
| Approach LOS | | B | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 9.0 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.42 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.8% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 330 | 49 | 81 | 467 | 86 | 45 | 219 | 98 | 83 | 227 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1510 | 3036 | | 1573 | 3077 | | 1587 | 2962 | | 1585 | 3072 | |
| Flt Permitted | 0.32 | 1.00 | | 0.46 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 502 | 3036 | | 760 | 3077 | | 929 | 2962 | | 903 | 3072 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 367 | 54 | 90 | 519 | 96 | 50 | 243 | 109 | 92 | 252 | 71 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 23 | 0 | 0 | 50 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 57 | 403 | 0 | 90 | 592 | 0 | 50 | 302 | 0 | 92 | 290 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 170 | 1028 | | 257 | 1041 | | 500 | 1595 | | 486 | 1654 | |
| v/s Ratio Prot | | 0.13 | | | c0.19 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.05 | | | c0.10 | | |
| v/c Ratio | 0.34 | 0.39 | | 0.35 | 0.57 | | 0.10 | 0.19 | | 0.19 | 0.18 | |
| Uniform Delay, d1 | 16.0 | 16.4 | | 16.1 | 17.6 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.71 | 0.67 | | 0.97 | 0.97 | | 0.95 | 0.98 | | 1.08 | 1.08 | |
| Incremental Delay, d2 | 4.6 | 1.0 | | 3.7 | 2.2 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 16.0 | 12.0 | | 19.3 | 19.2 | | 7.3 | 7.8 | | 9.2 | 8.5 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 12.5 | | | 19.2 | | | 7.7 | | | 8.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.1 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.34 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 348 | 78 | 87 | 418 | 50 | 46 | 231 | 58 | 46 | 279 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1509 | 3018 | | 1430 | 3723 | | | 3485 | | | 3521 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 708 | 3018 | | 715 | 3723 | | | 3028 | | | 3119 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 366 | 82 | 92 | 440 | 53 | 48 | 243 | 61 | 48 | 294 | 67 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 14 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 419 | 0 | 92 | 479 | 0 | 0 | 325 | 0 | 0 | 384 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 338 | 1439 | | 341 | 1776 | | | 1211 | | | 1248 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | 0.11 | | | c0.12 | | |
| v/s Ratio Perm | 0.09 | | | 0.13 | | | | 0.11 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.29 | | 0.27 | 0.27 | | | 0.27 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.2 | 10.2 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.61 | 1.76 | | 1.11 | 1.10 | | | 1.00 | | | 0.74 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.7 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.8 | 18.6 | | 13.0 | 11.5 | | | 13.7 | | | 10.4 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 18.4 | | | 11.8 | | | 13.7 | | | 10.4 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 58.4% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 294 | 92 | 92 | 293 | 92 | 120 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3087 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.79 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1336 | 1436 | | 2454 | | | 1303 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 327 | 102 | 102 | 326 | 102 | 133 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 423 | 53 | 0 | 498 | 0 | 0 | 263 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 699 | 751 | | 1284 | | | 421 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | 0.04 | | 0.20 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.61 | 0.07 | | 0.39 | | | 0.63 | | | 0.41 | |
| Uniform Delay, d1 | | 10.8 | 7.7 | | 9.3 | | | 18.7 | | | 17.2 | |
| Progression Factor | | 1.87 | 4.74 | | 0.53 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 0.2 | | 0.9 | | | 6.8 | | | 2.3 | |
| Delay (s) | | 24.0 | 36.6 | | 5.8 | | | 25.5 | | | 19.5 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 26.5 | | | 5.8 | | | 25.5 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 79.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 281 | 28 | 26 | 327 | 60 | 26 | 133 | 47 | 62 | 146 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1444 | 3026 | | 1566 | 3019 | | | 3582 | | | 3599 | |
| Flt Permitted | 0.48 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 736 | 3026 | | 899 | 3019 | | | 3238 | | | 3069 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 312 | 31 | 29 | 363 | 67 | 29 | 148 | 52 | 69 | 162 | 70 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 332 | 0 | 29 | 407 | 0 | 0 | 199 | 0 | 0 | 260 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 340 | 1397 | | 415 | 1393 | | | 1345 | | | 1275 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.18 | 0.24 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.6 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.67 | 0.68 | | 1.31 | 1.20 | | | 0.93 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.1 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.8 | 7.5 | | 12.9 | 13.3 | | | 11.2 | | | 5.4 | |
| Level of Service | A | A | | B | B | | | B | | | A | |
| Approach Delay (s) | | 7.5 | | | 13.3 | | | 11.2 | | | 5.4 | |
| Approach LOS | | A | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.6 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 450 | 26 | 86 | 507 | 222 | 24 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3281 | | | 3168 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.75 | | | 0.78 | | | 0.88 | | | 0.70 | |
| Satd. Flow (perm) | | 2462 | | | 2487 | | | 2739 | | | 2269 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 500 | 29 | 96 | 563 | 247 | 27 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 59 | 0 | 0 | 67 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 575 | 0 | 0 | 847 | 0 | 0 | 226 | 0 | 0 | 743 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 24.0 | | | 24.0 | | | 31.0 | | | 23.0 | |
| Effective Green, g (s) | | 24.0 | | | 24.0 | | | 31.0 | | | 23.0 | |
| Actuated g/C Ratio | | 0.37 | | | 0.37 | | | 0.48 | | | 0.35 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 909 | | | 918 | | | 1333 | | | 803 | |
| v/s Ratio Prot | | | | | | | | c0.01 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.34 | | | 0.07 | | | c0.33 | |
| v/c Ratio | | 0.63 | | | 0.92 | | | 0.17 | | | 1.02dl | |
| Uniform Delay, d1 | | 16.9 | | | 19.6 | | | 9.7 | | | 20.2 | |
| Progression Factor | | 1.65 | | | 1.00 | | | 1.00 | | | 0.77 | |
| Incremental Delay, d2 | | 3.3 | | | 16.0 | | | 0.3 | | | 17.5 | |
| Delay (s) | | 31.1 | | | 35.6 | | | 10.0 | | | 33.1 | |
| Level of Service | | C | | | D | | | A | | | C | |
| Approach Delay (s) | | 31.1 | | | 35.6 | | | 10.0 | | | 33.1 | |
| Approach LOS | | C | | | D | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 86.1% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 899 | 132 | 48 | 794 | 0 | 82 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3039 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3039 | | | 2485 | | | 1328 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 999 | 147 | 53 | 882 | 0 | 91 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1130 | 0 | 0 | 935 | 0 | 0 | 114 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1958 | | | 911 | | | 236 | | | | | |
| v/s Ratio Prot | c0.37 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.38 | | | c0.09 | | | | | |
| v/c Ratio | 0.58 | | | 1.03 | | | 0.48 | | | | | |
| Uniform Delay, d1 | 9.1 | | | 28.5 | | | 33.3 | | | | | |
| Progression Factor | 0.16 | | | 1.43 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 35.5 | | | 6.9 | | | | | |
| Delay (s) | 1.7 | | | 76.4 | | | 40.2 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.7 | | | 76.4 | | | 40.2 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.6 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.78 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.9% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 224 | 642 | 24 | 112 | 614 | 185 | 61 | 4 | 107 | 212 | 10 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3192 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 471 | 3192 | | 583 | 3320 | 1485 | | 1592 | | 763 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 249 | 713 | 27 | 124 | 682 | 206 | 68 | 4 | 119 | 236 | 11 | 237 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 96 | 0 | 90 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 249 | 738 | 0 | 124 | 682 | 110 | 0 | 101 | 0 | 236 | 11 | 102 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Effective Green, g (s) | 54.9 | 42.5 | | 47.6 | 38.2 | 48.2 | | 12.1 | | 25.1 | 25.1 | 38.8 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.42 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 452 | 1507 | | 421 | 1409 | 795 | | 214 | | 312 | 487 | 640 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.47 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.3 | | 10.9 | 18.8 | 10.5 | | 36.0 | | 28.6 | 23.5 | 15.6 |
| Progression Factor | 2.63 | 1.86 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.0 | 0.0 | 0.2 |
| Delay (s) | 25.9 | 31.3 | | 11.4 | 20.0 | 10.6 | | 38.2 | | 38.6 | 23.6 | 15.8 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 30.0 | | | 17.0 | | | 38.2 | | | 27.1 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 61.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013




| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 22.8 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 7.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.2% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 475 | 64 | 196 | 511 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3153 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.34 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3153 | | 582 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 528 | 71 | 218 | 568 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 587 | 0 | 218 | 568 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1335 | | 456 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.18 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.22 | | | | | | | | |
| v/c Ratio | | 0.44 | | 0.48 | 0.31 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.4 | | 15.9 | 9.3 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.35 | 0.18 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 2.8 | 0.3 | | | | | | 0.3 | |
| Delay (s) | | 18.4 | | 8.4 | 2.0 | | | | | | 21.2 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 18.4 | | | 3.8 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 44.9% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 481 | 0 | 0 | 644 | 129 | 63 | 90 | 59 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3130 | | | 4504 | | | | |
| Flt Permitted | 0.21 | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | 367 | 3320 | | | 3130 | | | 4504 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 534 | 0 | 0 | 716 | 143 | 70 | 100 | 66 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 45 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 534 | 0 | 0 | 840 | 0 | 0 | 191 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 359 | 1875 | | | 1289 | | | 1431 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.27 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.28 | | | 0.65 | | | 0.13 | | | | |
| Uniform Delay, d1 | 18.6 | 9.6 | | | 20.1 | | | 20.7 | | | | |
| Progression Factor | 0.43 | 0.31 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.9 | 0.4 | | | 2.6 | | | 0.2 | | | | |
| Delay (s) | 9.9 | 3.4 | | | 22.7 | | | 20.9 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 22.7 | | | 20.9 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 44.9% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 346 | 114 | 91 | 386 | 81 | 129 | 78 | 30 | 31 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.98 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2977 | | | 3007 | | | 1840 | | | 1769 | |
| Flt Permitted | | 0.66 | | | 0.69 | | | 0.72 | | | 0.95 | |
| Satd. Flow (perm) | | 1975 | | | 2105 | | | 1358 | | | 1683 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 384 | 127 | 101 | 429 | 90 | 143 | 87 | 33 | 34 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 8 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 604 | 0 | 0 | 599 | 0 | 0 | 255 | 0 | 0 | 223 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 699 | | | 745 | | | 669 | | | 829 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.28 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.86 | | | 0.80 | | | 0.38 | | | 0.27 | |
| Uniform Delay, d1 | | 19.6 | | | 19.0 | | | 10.3 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 13.5 | | | 9.0 | | | 1.6 | | | 0.8 | |
| Delay (s) | | 33.0 | | | 27.9 | | | 12.0 | | | 10.5 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 33.0 | | | 27.9 | | | 12.0 | | | 10.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.6 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.58 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 80.6% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 114 | 201 | 88 | 159 | 311 | 65 | 124 | 542 | 67 | 95 | 950 | 180 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2980 | | 1573 | 3683 | | 1508 | 3069 | 1333 | 1520 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.53 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2980 | | 880 | 3683 | | 212 | 3069 | 1333 | 541 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 120 | 212 | 93 | 167 | 327 | 68 | 131 | 571 | 71 | 100 | 1000 | 189 |
| RTOR Reduction (vph) | 0 | 58 | 0 | 0 | 21 | 0 | 0 | 0 | 45 | 0 | 0 | 120 |
| Lane Group Flow (vph) | 120 | 247 | 0 | 167 | 374 | 0 | 131 | 571 | 26 | 100 | 1000 | 69 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 982 | | 343 | 1213 | | 181 | 1119 | 486 | 298 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.02 | 0.10 | | c0.05 | 0.19 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.12 | | | c0.15 | | | 0.26 | | 0.02 | 0.12 | | 0.05 |
| v/c Ratio | 0.40 | 0.25 | | 0.49 | 0.31 | | 0.72 | 0.51 | 0.05 | 0.34 | 0.88 | 0.14 |
| Uniform Delay, d1 | 19.7 | 20.8 | | 20.7 | 21.3 | | 18.1 | 21.1 | 17.5 | 15.4 | 25.3 | 18.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.39 | 1.04 | 2.36 |
| Incremental Delay, d2 | 4.0 | 0.6 | | 4.9 | 0.7 | | 22.1 | 1.7 | 0.2 | 2.2 | 7.8 | 0.4 |
| Delay (s) | 23.7 | 21.5 | | 25.5 | 21.9 | | 40.2 | 22.7 | 17.7 | 23.7 | 34.2 | 43.2 |
| Level of Service | C | C | | C | C | | D | C | B | C | C | D |
| Approach Delay (s) | | 22.1 | | | 23.0 | | | 25.2 | | | 34.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 70.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 49 | 295 | 30 | 33 | 393 | 24 | 33 | 102 | 41 | 36 | 134 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1962 | 1466 | | 1993 | 1480 | | 2015 | 1506 | | 2002 | 1511 |
| Flt Permitted | | 0.90 | 1.00 | | 0.96 | 1.00 | | 0.91 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1777 | 1466 | | 1913 | 1480 | | 1861 | 1506 | | 1877 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 311 | 32 | 35 | 414 | 25 | 35 | 107 | 43 | 38 | 141 | 69 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 363 | 15 | 0 | 449 | 12 | 0 | 142 | 18 | 0 | 179 | 29 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 820 | 677 | | 883 | 683 | | 773 | 626 | | 780 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.20 | 0.01 | | 0.23 | 0.01 | | 0.08 | 0.01 | | 0.10 | 0.02 |
| v/c Ratio | | 0.44 | 0.02 | | 0.51 | 0.02 | | 0.18 | 0.03 | | 0.23 | 0.05 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 12.3 | 9.5 | | 12.0 | 11.2 | | 12.3 | 11.3 |
| Progression Factor | | 1.00 | 1.00 | | 0.55 | 0.41 | | 1.13 | 1.31 | | 1.04 | 0.94 |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 2.0 | 0.0 | | 0.5 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | | 13.6 | 9.6 | | 8.7 | 4.0 | | 14.1 | 14.9 | | 13.4 | 10.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.3 | | | 8.5 | | | 14.3 | | | 12.7 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.38 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 83.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 317 | 20 | 51 | 299 | 51 | 10 | 109 | 23 | 115 | 214 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3072 | | 1550 | 3031 | | 1550 | 3017 | | 1550 | 2991 | |
| Flt Permitted | 0.95 | 1.00 | | 0.53 | 1.00 | | 0.55 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3072 | | 864 | 3031 | | 892 | 3017 | | 1074 | 2991 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 352 | 22 | 57 | 332 | 57 | 11 | 121 | 26 | 128 | 238 | 72 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 21 | 0 | 0 | 15 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 367 | 0 | 57 | 368 | 0 | 11 | 132 | 0 | 128 | 268 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1512 | | 292 | 1026 | | 371 | 1253 | | 446 | 1242 | |
| v/s Ratio Prot | c0.05 | 0.12 | | | c0.12 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.07 | | | 0.01 | | | c0.12 | | |
| v/c Ratio | 0.50 | 0.24 | | 0.20 | 0.36 | | 0.03 | 0.11 | | 0.29 | 0.22 | |
| Uniform Delay, d1 | 27.3 | 9.5 | | 15.2 | 16.2 | | 11.2 | 11.6 | | 12.6 | 12.2 | |
| Progression Factor | 0.93 | 0.55 | | 1.00 | 1.00 | | 0.51 | 0.39 | | 1.12 | 1.12 | |
| Incremental Delay, d2 | 9.8 | 0.4 | | 1.5 | 1.0 | | 0.1 | 0.1 | | 1.6 | 0.4 | |
| Delay (s) | 35.2 | 5.6 | | 16.7 | 17.2 | | 5.9 | 4.7 | | 15.8 | 14.0 | |
| Level of Service | D | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 11.0 | | | 17.1 | | | 4.8 | | | 14.5 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 39.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 64 | 267 | 88 | 245 | 330 | 63 | 104 | 295 | 189 | 55 | 282 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.98 | | | 0.95 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 2984 | | 1550 | 3025 | | | 3133 | | | 3233 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.74 | | | 0.74 | |
| Satd. Flow (perm) | 813 | 2984 | | 1550 | 3025 | | | 2347 | | | 2400 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 297 | 98 | 272 | 367 | 70 | 116 | 328 | 210 | 61 | 313 | 56 |
| RTOR Reduction (vph) | 0 | 53 | 0 | 0 | 26 | 0 | 0 | 94 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 71 | 342 | 0 | 272 | 411 | 0 | 0 | 560 | 0 | 0 | 410 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 15.0 | 15.0 | | 14.0 | 32.0 | | | 17.0 | | | 17.0 | |
| Effective Green, g (s) | 15.0 | 15.0 | | 14.0 | 32.0 | | | 17.0 | | | 17.0 | |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.23 | 0.53 | | | 0.28 | | | 0.28 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 203 | 746 | | 362 | 1613 | | | 665 | | | 680 | |
| v/s Ratio Prot | c0.11 | | | c0.18 | | | 0.14 | | | | | |
| v/s Ratio Perm | 0.09 | | | | | | c0.24 | | | 0.17 | | |
| v/c Ratio | 0.35 | 0.46 | | 0.75 | 0.25 | | | 0.84 | | | 0.60 | |
| Uniform Delay, d1 | 18.5 | 19.1 | | 21.4 | 7.6 | | | 20.2 | | | 18.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.7 | 2.0 | | 13.4 | 0.4 | | | 12.3 | | | 3.9 | |
| Delay (s) | 23.2 | 21.1 | | 34.8 | 7.9 | | | 32.6 | | | 22.5 | |
| Level of Service | C | C | | C | A | | | C | | | C | |
| Approach Delay (s) | 21.4 | | | 18.2 | | | 32.6 | | | 22.5 | | |
| Approach LOS | C | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.9 | | HCM Level of Service | | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 60.0 | | Sum of lost time (s) | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 68.2% | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 26 | 454 | 16 | 75 | 645 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1620 | | | 1603 | | | 3249 | | | | |
| Flt Permitted | | 0.94 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1529 | | | 1465 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 29 | 504 | 18 | 83 | 717 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 550 | 0 | 0 | 878 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 976 | | | 935 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | 0.60 | | | 0.07 | | | | |
| v/c Ratio | | 0.56 | | | 0.94 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 6.6 | | | 10.6 | | | 20.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 2.3 | | | 18.0 | | | 0.9 | | | | |
| Delay (s) | | 9.0 | | | 28.6 | | | 21.2 | | | | |
| Level of Service | | A | | | C | | | C | | | | |
| Approach Delay (s) | | 9.0 | | | 28.6 | | | 21.2 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 21.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

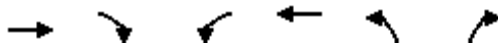


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (veh/h) | 142 | 464 | 611 | 39 | 119 | 176 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 149 | 488 | 643 | 41 | 125 | 185 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.95 | | | | 0.95 | 0.95 |
| vC, conflicting volume | 701 | | | | 1230 | 364 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 586 | | | | 1141 | 232 |
| tC, single (s) | 4.2 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 84 | | | | 19 | 75 |
| cM capacity (veh/h) | 908 | | | | 154 | 727 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | SB 1 | SB 2 |
| Volume Total | 312 | 326 | 429 | 255 | 125 | 185 |
| Volume Left | 149 | 0 | 0 | 0 | 125 | 0 |
| Volume Right | 0 | 0 | 0 | 41 | 0 | 185 |
| cSH | 908 | 1700 | 1700 | 1700 | 154 | 727 |
| Volume to Capacity | 0.16 | 0.19 | 0.25 | 0.15 | 0.81 | 0.25 |
| Queue Length 95th (ft) | 15 | 0 | 0 | 0 | 132 | 25 |
| Control Delay (s) | 5.6 | 0.0 | 0.0 | 0.0 | 87.9 | 11.6 |
| Lane LOS | A | | | | F | B |
| Approach Delay (s) | 2.7 | | 0.0 | | 42.4 | |
| Approach LOS | | | | | E | |
| Intersection Summary | | | | | | |
| Average Delay | | | 9.1 | | | |
| Intersection Capacity Utilization | | | 55.1% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 690 | 0 | 1 | 620 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 767 | 0 | 1 | 689 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 767 | 0 | 0 | 690 | 7 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 78.0 | | | 48.0 | 14.0 | |
| Effective Green, g (s) | 74.0 | | | 48.0 | 14.0 | |
| Actuated g/C Ratio | 0.74 | | | 0.48 | 0.14 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1294 | | | 839 | 214 | |
| v/s Ratio Prot | c0.44 | | | | c0.00 | |
| v/s Ratio Perm | | | | 0.40 | | |
| v/c Ratio | 0.59 | | | 0.82 | 0.03 | |
| Uniform Delay, d1 | 6.0 | | | 22.3 | 37.2 | |
| Progression Factor | 0.05 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.9 | | | 8.9 | 0.3 | |
| Delay (s) | 1.2 | | | 31.3 | 37.5 | |
| Level of Service | A | | | C | D | |
| Approach Delay (s) | 1.2 | | | 31.3 | 37.5 | |
| Approach LOS | A | | | C | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 16.0 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.62 | | | |
| Actuated Cycle Length (s) | | | 100.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 243 | 606 | 32 | 407 | 0 | 0 | 0 | 0 | 17 | 6 | 249 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 270 | 673 | 36 | 452 | 0 | 0 | 0 | 0 | 19 | 7 | 277 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 50 |
| cM capacity (veh/h) | 1119 | | | 1276 | | | 77 | 200 | 544 | 346 | 314 | 555 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 180 | 763 | 488 | 26 | 277 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 673 | 0 | 0 | 277 | | | | | | | |
| cSH | 1700 | 1700 | 1276 | 337 | 555 | | | | | | | |
| Volume to Capacity | 0.11 | 0.45 | 0.03 | 0.08 | 0.50 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 69 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.6 | 17.8 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.7 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 260 | 0 | 439 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 289 | 0 | 488 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 144 | 144 | 488 | | | |
| Volume Left (vph) | 144 | 144 | 488 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.26 | 0.26 | 0.68 | | | |
| Capacity (veh/h) | 536 | 537 | 701 | | | |
| Control Delay (s) | 10.3 | 10.3 | 17.7 | | | |
| Approach Delay (s) | 10.3 | | 17.7 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 40.2% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 530 | 345 | 313 | 770 | 0 | 0 | 0 | 0 | 279 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1228 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1228 | | 3425 | | | | | 1359 | 3806 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 558 | 363 | 329 | 811 | 0 | 0 | 0 | 0 | 294 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 112 |
| Lane Group Flow (vph) | 0 | 558 | 146 | 0 | 1140 | 0 | 0 | 0 | 0 | 162 | 558 | 84 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 75.1 | | | | | 31.4 | 31.4 | 64.4 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 75.1 | | | | | 31.4 | 31.4 | 64.4 |
| Actuated g/C Ratio | | 0.17 | 0.17 | | 0.47 | | | | | 0.20 | 0.20 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 536 | 207 | | 1608 | | | | | 267 | 747 | 456 |
| v/s Ratio Prot | | c0.18 | | | c0.33 | | | | | 0.12 | c0.15 | |
| v/s Ratio Perm | | | 0.12 | | | | | | | | | 0.07 |
| v/c Ratio | | 1.04 | 0.71 | | 0.71 | | | | | 0.61 | 0.75 | 0.18 |
| Uniform Delay, d1 | | 66.5 | 62.7 | | 33.8 | | | | | 58.7 | 60.6 | 30.9 |
| Progression Factor | | 1.00 | 1.00 | | 0.04 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 50.0 | 18.3 | | 0.1 | | | | | 3.9 | 4.1 | 0.2 |
| Delay (s) | | 116.5 | 81.1 | | 1.6 | | | | | 62.5 | 64.6 | 31.1 |
| Level of Service | | F | F | | A | | | | | E | E | C |
| Approach Delay (s) | | 102.5 | | | 1.6 | | | 0.0 | | | 57.5 | |
| Approach LOS | | F | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 50.2 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 28.5 | | |
| Intersection Capacity Utilization | | | 81.0% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 292 | 517 | 0 | 0 | 750 | 144 | 332 | 214 | 206 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3059 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3059 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 574 | 0 | 0 | 833 | 160 | 369 | 238 | 229 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 70 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 574 | 0 | 0 | 833 | 93 | 284 | 482 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | | Perm | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | | 12 | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 76.9 | 76.9 | | | 35.1 | 35.1 | 22.0 | 22.0 | | | | |
| Effective Green, g (s) | 76.9 | 76.9 | | | 35.1 | 35.1 | 22.0 | 22.0 | | | | |
| Actuated g/C Ratio | 0.48 | 0.48 | | | 0.22 | 0.22 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 771 | 1649 | | | 704 | 326 | 215 | 421 | | | | |
| v/s Ratio Prot | c0.20 | 0.17 | | | c0.26 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | | 0.06 | | | | | | |
| v/c Ratio | 0.42 | 0.35 | | | 1.18 | 0.28 | 1.32 | 1.15 | | | | |
| Uniform Delay, d1 | 27.0 | 25.9 | | | 62.5 | 52.0 | 69.0 | 69.0 | | | | |
| Progression Factor | 0.05 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 96.6 | 0.5 | 173.2 | 89.9 | | | | |
| Delay (s) | 1.7 | 1.5 | | | 159.0 | 52.5 | 242.2 | 158.9 | | | | |
| Level of Service | A | A | | | F | D | F | F | | | | |
| Approach Delay (s) | 1.6 | | | | 141.8 | | 187.2 | | 0.0 | | | |
| Approach LOS | A | | | | F | | F | | A | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 109.5 | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | Sum of lost time (s) | | | | 28.0 | | | |
| Intersection Capacity Utilization | | | 69.6% | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 312 | 136 | 188 | 418 | 107 | 108 | 522 | 95 | 106 | 803 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1579 | 1600 | 1372 | 1594 | 1788 | | 1578 | 3000 | | 1537 | 3001 | |
| Flt Permitted | 0.15 | 1.00 | 1.00 | 0.35 | 1.00 | | 0.13 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 256 | 1600 | 1372 | 583 | 1788 | | 216 | 3000 | | 511 | 3001 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 328 | 143 | 198 | 440 | 113 | 114 | 549 | 100 | 112 | 845 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 100 | 0 | 11 | 0 | 0 | 16 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 147 | 328 | 43 | 198 | 542 | 0 | 114 | 633 | 0 | 112 | 958 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | | 43.0 | 36.0 | | 40.2 | 34.6 | |
| Effective Green, g (s) | 32.0 | 28.0 | 27.0 | 32.0 | 27.0 | | 41.0 | 36.0 | | 38.2 | 34.6 | |
| Actuated g/C Ratio | 0.35 | 0.31 | 0.30 | 0.35 | 0.30 | | 0.45 | 0.40 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 178 | 494 | 409 | 273 | 533 | | 188 | 1192 | | 268 | 1146 | |
| v/s Ratio Prot | c0.05 | 0.20 | | 0.05 | c0.30 | | c0.04 | 0.21 | | 0.02 | c0.32 | |
| v/s Ratio Perm | 0.24 | | 0.03 | 0.21 | | | 0.23 | | | 0.16 | | |
| v/c Ratio | 0.83 | 0.66 | 0.10 | 0.73 | 1.02 | | 0.61 | 0.53 | | 0.42 | 0.84 | |
| Uniform Delay, d1 | 23.9 | 27.2 | 23.0 | 24.8 | 31.8 | | 17.4 | 20.8 | | 16.7 | 25.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 25.7 | 6.9 | 0.5 | 9.2 | 43.5 | | 5.4 | 1.7 | | 1.1 | 7.3 | |
| Delay (s) | 49.6 | 34.1 | 23.5 | 34.0 | 75.3 | | 22.8 | 22.5 | | 17.8 | 32.7 | |
| Level of Service | D | C | C | C | E | | C | C | | B | C | |
| Approach Delay (s) | | 35.3 | | | 64.4 | | | 22.6 | | | 31.2 | |
| Approach LOS | | D | | | E | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.6 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 87.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 39 | 402 | 61 | 112 | 645 | 62 | 37 | 59 | 44 | 31 | 91 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.95 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1971 | 1476 | | 1624 | 1387 | | 1851 | | | 1867 | |
| Flt Permitted | | 0.91 | 1.00 | | 0.88 | 1.00 | | 0.90 | | | 0.95 | |
| Satd. Flow (perm) | | 1804 | 1476 | | 1432 | 1387 | | 1679 | | | 1783 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 423 | 64 | 118 | 679 | 65 | 39 | 62 | 46 | 33 | 96 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 20 | 0 | 0 | 18 | 0 | 25 | 0 | 0 | 31 | 0 |
| Lane Group Flow (vph) | 0 | 464 | 44 | 0 | 797 | 47 | 0 | 122 | 0 | 0 | 172 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 45.0 | 45.0 | | 45.0 | 45.0 | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 45.0 | 45.0 | | 45.0 | 45.0 | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.69 | 0.69 | | 0.69 | 0.69 | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1249 | 1022 | | 991 | 960 | | 362 | | | 384 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | 0.03 | | 0.56 | 0.03 | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.37 | 0.04 | | 0.80 | 0.05 | | 0.34 | | | 0.45 | |
| Uniform Delay, d1 | | 4.1 | 3.2 | | 6.9 | 3.2 | | 21.6 | | | 22.1 | |
| Progression Factor | | 1.00 | 1.00 | | 0.65 | 1.36 | | 1.00 | | | 1.49 | |
| Incremental Delay, d2 | | 0.8 | 0.1 | | 3.8 | 0.1 | | 2.5 | | | 3.7 | |
| Delay (s) | | 5.0 | 3.3 | | 8.4 | 4.4 | | 24.1 | | | 36.7 | |
| Level of Service | | A | A | | A | A | | C | | | D | |
| Approach Delay (s) | | 4.8 | | | 8.1 | | | 24.1 | | | 36.7 | |
| Approach LOS | | A | | | A | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 90.6% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 59 | 318 | 41 | 110 | 700 | 20 | 36 | 114 | 44 | 17 | 184 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1756 | 1469 | | 1726 | 1498 | | 1712 | 1474 | | 1709 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.89 | 1.00 | | 0.75 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 1312 | 1469 | | 1546 | 1498 | | 1304 | 1474 | | 1667 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 335 | 43 | 116 | 737 | 21 | 38 | 120 | 46 | 18 | 194 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 0 | 5 | 0 | 0 | 37 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 0 | 397 | 28 | 0 | 853 | 16 | 0 | 158 | 9 | 0 | 267 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 42.0 | 42.0 | | 42.0 | 42.0 | | 13.0 | 13.0 | | 13.0 | |
| Effective Green, g (s) | | 42.0 | 42.0 | | 42.0 | 42.0 | | 13.0 | 13.0 | | 13.0 | |
| Actuated g/C Ratio | | 0.65 | 0.65 | | 0.65 | 0.65 | | 0.20 | 0.20 | | 0.20 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 848 | 949 | | 999 | 968 | | 261 | 295 | | 333 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.30 | 0.02 | | c0.55 | 0.01 | | 0.12 | 0.01 | | c0.16 | |
| v/c Ratio | | 0.47 | 0.03 | | 0.85 | 0.02 | | 0.61 | 0.03 | | 0.80 | |
| Uniform Delay, d1 | | 5.8 | 4.1 | | 9.1 | 4.1 | | 23.7 | 20.9 | | 24.8 | |
| Progression Factor | | 1.91 | 3.08 | | 0.98 | 0.40 | | 1.00 | 1.00 | | 0.68 | |
| Incremental Delay, d2 | | 1.7 | 0.1 | | 4.5 | 0.0 | | 10.0 | 0.2 | | 17.9 | |
| Delay (s) | | 12.9 | 12.8 | | 13.4 | 1.7 | | 33.7 | 21.1 | | 34.8 | |
| Level of Service | | B | B | | B | A | | C | C | | C | |
| Approach Delay (s) | | 12.9 | | | 13.1 | | | 30.8 | | | 34.8 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.5 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.84 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 101.4% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 298 | 35 | 76 | 8 | 14 | 11 | 38 | 247 | 8 | 31 | 570 | 799 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.98 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1855 | 1440 | | 1767 | | | 1995 | | | 1975 | 1382 |
| Flt Permitted | | 0.75 | 1.00 | | 0.92 | | | 0.79 | | | 0.97 | 1.00 |
| Satd. Flow (perm) | | 1455 | 1440 | | 1640 | | | 1587 | | | 1930 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 331 | 39 | 84 | 9 | 16 | 12 | 42 | 274 | 9 | 34 | 633 | 888 |
| RTOR Reduction (vph) | 0 | 0 | 49 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 295 |
| Lane Group Flow (vph) | 0 | 370 | 35 | 0 | 28 | 0 | 0 | 323 | 0 | 0 | 667 | 593 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 654 | 598 | | 429 | | | 781 | | | 950 | 680 |
| v/s Ratio Prot | | c0.07 | | | | | | | | | | |
| v/s Ratio Perm | | 0.17 | 0.02 | | 0.02 | | | 0.20 | | | 0.35 | c0.43 |
| v/c Ratio | | 0.57 | 0.06 | | 0.07 | | | 0.41 | | | 0.70 | 0.87 |
| Uniform Delay, d1 | | 14.5 | 11.4 | | 18.0 | | | 10.5 | | | 12.8 | 14.7 |
| Progression Factor | | 0.51 | 0.15 | | 1.00 | | | 0.74 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 3.3 | 0.2 | | 0.3 | | | 1.0 | | | 4.3 | 14.4 |
| Delay (s) | | 10.6 | 1.9 | | 18.3 | | | 8.9 | | | 17.1 | 29.1 |
| Level of Service | | B | A | | B | | | A | | | B | C |
| Approach Delay (s) | | 9.0 | | | 18.3 | | | 8.9 | | | 24.0 | |
| Approach LOS | | A | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 95.4% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 923 | 289 | 447 | 1189 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4576 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.12 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4576 | | 198 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 972 | 304 | 471 | 1252 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 44 |
| Lane Group Flow (vph) | 0 | 1215 | 0 | 471 | 1252 | 0 | 0 | 0 | 0 | 308 | 600 | 227 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 28.5 | | 56.0 | 54.5 | | | | | 23.5 | 23.5 | 23.5 |
| Effective Green, g (s) | | 28.5 | | 56.0 | 54.5 | | | | | 23.5 | 23.5 | 23.5 |
| Actuated g/C Ratio | | 0.32 | | 0.62 | 0.61 | | | | | 0.26 | 0.26 | 0.26 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1449 | | 463 | 2010 | | | | | 389 | 761 | 377 |
| v/s Ratio Prot | | 0.27 | | c0.24 | 0.38 | | | | | | | |
| v/s Ratio Perm | | | | c0.39 | | | | | | c0.21 | 0.21 | 0.16 |
| v/c Ratio | | 0.84 | | 1.02 | 0.62 | | | | | 0.79 | 0.79 | 0.60 |
| Uniform Delay, d1 | | 28.6 | | 25.4 | 11.2 | | | | | 31.0 | 30.9 | 29.2 |
| Progression Factor | | 1.00 | | 0.64 | 0.53 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.9 | | 32.3 | 0.7 | | | | | 10.8 | 5.6 | 2.9 |
| Delay (s) | | 34.6 | | 48.5 | 6.6 | | | | | 41.8 | 36.5 | 32.0 |
| Level of Service | | C | | D | A | | | | | D | D | C |
| Approach Delay (s) | | 34.6 | | | 18.1 | | | 0.0 | | | 36.9 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 111.8% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1095 | 0 | 0 | 1206 | 271 | 430 | 351 | 337 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Flt Permitted | 0.09 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 290 | 3353 | | | 3241 | 1489 | | 4513 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1153 | 0 | 0 | 1269 | 285 | 453 | 369 | 355 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 57 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1153 | 0 | 0 | 1269 | 199 | 0 | 1120 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 52.7 | 52.7 | | | 39.7 | 39.7 | | 25.3 | | | | |
| Effective Green, g (s) | 52.7 | 52.7 | | | 39.7 | 39.7 | | 25.3 | | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | | | 0.44 | 0.44 | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 392 | 1963 | | | 1430 | 657 | | 1269 | | | | |
| v/s Ratio Prot | c0.07 | 0.34 | | | 0.39 | | | | | | | |
| v/s Ratio Perm | c0.47 | | | | | 0.13 | | 0.25 | | | | |
| v/c Ratio | 0.92 | 0.59 | | | 0.89 | 0.30 | | 0.88 | | | | |
| Uniform Delay, d1 | 21.2 | 11.8 | | | 23.1 | 16.2 | | 30.9 | | | | |
| Progression Factor | 1.60 | 0.50 | | | 0.53 | 0.38 | | 1.00 | | | | |
| Incremental Delay, d2 | 16.9 | 0.7 | | | 6.2 | 0.8 | | 8.1 | | | | |
| Delay (s) | 50.9 | 6.6 | | | 18.4 | 7.0 | | 39.0 | | | | |
| Level of Service | D | A | | | B | A | | D | | | | |
| Approach Delay (s) | | 17.2 | | | 16.3 | | | 39.0 | | | 0.0 | |
| Approach LOS | | B | | | B | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.9 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 111.8% | | | | ICU Level of Service | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 719 | 408 | 104 | 968 | 76 | 227 | 179 | 66 | 80 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1310 | 1603 | 3286 | | 1577 | 3003 | | 1540 | 2944 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.31 | 1.00 | | 0.45 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1310 | 524 | 3286 | | 741 | 3003 | | 961 | 2944 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 757 | 429 | 109 | 1019 | 80 | 239 | 188 | 69 | 84 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 197 | 0 | 7 | 0 | 0 | 43 | 0 | 0 | 103 | 0 |
| Lane Group Flow (vph) | 142 | 757 | 232 | 109 | 1092 | 0 | 239 | 214 | 0 | 84 | 195 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 47.9 | 38.0 | 47.5 | 40.7 | 34.3 | | 30.1 | 22.2 | | 21.5 | 17.1 | |
| Effective Green, g (s) | 47.9 | 38.0 | 47.5 | 40.7 | 34.3 | | 30.1 | 22.2 | | 21.5 | 17.1 | |
| Actuated g/C Ratio | 0.53 | 0.42 | 0.53 | 0.45 | 0.38 | | 0.33 | 0.25 | | 0.24 | 0.19 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 249 | 1382 | 691 | 314 | 1252 | | 336 | 741 | | 258 | 559 | |
| v/s Ratio Prot | c0.06 | 0.23 | 0.04 | 0.02 | c0.33 | | c0.08 | 0.07 | | 0.02 | 0.07 | |
| v/s Ratio Perm | 0.24 | | 0.14 | 0.13 | | | c0.16 | | | 0.06 | | |
| v/c Ratio | 0.57 | 0.55 | 0.34 | 0.35 | 0.87 | | 0.71 | 0.29 | | 0.33 | 0.35 | |
| Uniform Delay, d1 | 15.4 | 19.5 | 12.2 | 14.7 | 25.8 | | 24.1 | 27.5 | | 27.6 | 31.6 | |
| Progression Factor | 1.66 | 0.37 | 0.33 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.9 | 1.2 | 0.2 | 0.7 | 8.6 | | 6.9 | 0.8 | | 0.7 | 1.3 | |
| Delay (s) | 32.4 | 8.4 | 4.2 | 15.3 | 34.4 | | 31.1 | 28.3 | | 28.3 | 33.0 | |
| Level of Service | C | A | A | B | C | | C | C | | C | C | |
| Approach Delay (s) | | 9.6 | | | 32.7 | | | 29.6 | | | 31.9 | |
| Approach LOS | | A | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 81.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont Street & Ashland Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 250 | 367 | 95 | 441 | 113 | 362 | 340 | 84 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 2925 | | 1653 | 3267 | | 1620 | 3402 | | 1580 | 3183 | |
| Flt Permitted | 0.34 | 1.00 | | 0.22 | 1.00 | | 0.32 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | 619 | 2925 | | 375 | 3267 | | 544 | 3402 | | 822 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 100 | 464 | 119 | 381 | 358 | 88 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 215 | 0 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 434 | 0 | 100 | 564 | 0 | 381 | 427 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 39.2 | 32.5 | | 46.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 39.2 | 32.5 | | 46.4 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.34 | 0.28 | | 0.40 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 274 | 827 | | 266 | 1026 | | 454 | 1308 | | 339 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.03 | c0.17 | | c0.15 | 0.13 | | 0.04 | 0.15 | |
| v/s Ratio Perm | 0.05 | | | 0.12 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.18 | 0.52 | | 0.38 | 0.55 | | 0.84 | 0.33 | | 0.64 | 0.54 | |
| Uniform Delay, d1 | 25.9 | 34.7 | | 23.2 | 32.7 | | 20.8 | 24.9 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.4 | 2.4 | | 1.1 | 2.1 | | 13.1 | 0.7 | | 4.3 | 2.3 | |
| Delay (s) | 26.3 | 37.1 | | 24.3 | 34.8 | | 33.9 | 25.6 | | 33.1 | 37.5 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 36.4 | | | 33.3 | | | 29.4 | | | 36.1 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 77.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 695 | 141 | 10 | 741 | 89 | 104 | 287 | 9 | 204 | 609 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3039 | | | 3061 | | 1452 | 3227 | | 1522 | 2871 | |
| Flt Permitted | | 0.62 | | | 0.94 | | 0.18 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | | 1888 | | | 2880 | | 278 | 3227 | | 802 | 2871 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 772 | 157 | 11 | 823 | 99 | 116 | 319 | 10 | 227 | 677 | 203 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 11 | 0 | 0 | 3 | 0 | 0 | 35 | 0 |
| Lane Group Flow (vph) | 0 | 1028 | 0 | 0 | 922 | 0 | 116 | 326 | 0 | 227 | 845 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 41.0 | | | 33.0 | | 26.0 | 22.0 | | 28.0 | 23.0 | |
| Effective Green, g (s) | | 41.0 | | | 33.0 | | 26.0 | 22.0 | | 28.0 | 23.0 | |
| Actuated g/C Ratio | | 0.51 | | | 0.41 | | 0.32 | 0.28 | | 0.35 | 0.29 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1025 | | | 1188 | | 149 | 887 | | 326 | 825 | |
| v/s Ratio Prot | | c0.05 | | | | | 0.04 | 0.10 | | c0.04 | c0.29 | |
| v/s Ratio Perm | | c0.46 | | | 0.32 | | 0.21 | | | 0.20 | | |
| v/c Ratio | | 1.00 | | | 0.78 | | 0.78 | 0.37 | | 0.70 | 1.02 | |
| Uniform Delay, d1 | | 19.5 | | | 20.3 | | 33.5 | 23.4 | | 24.7 | 28.5 | |
| Progression Factor | | 1.00 | | | 1.00 | | 0.62 | 0.64 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 28.8 | | | 5.0 | | 30.6 | 1.1 | | 11.7 | 37.7 | |
| Delay (s) | | 48.3 | | | 25.3 | | 51.4 | 16.0 | | 36.3 | 66.2 | |
| Level of Service | | D | | | C | | D | B | | D | E | |
| Approach Delay (s) | | 48.3 | | | 25.3 | | | 25.2 | | | 60.0 | |
| Approach LOS | | D | | | C | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.94 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 80.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 96.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 67 | 261 | 136 | 132 | 418 | 28 | 72 | 462 | 86 | 35 | 698 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1708 | 1912 | | 1602 | 2019 | | 1676 | 3219 | | 1436 | 3274 | |
| Flt Permitted | 0.35 | 1.00 | | 0.40 | 1.00 | | 0.27 | 1.00 | | 0.39 | 1.00 | |
| Satd. Flow (perm) | 628 | 1912 | | 673 | 2019 | | 469 | 3219 | | 591 | 3274 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 269 | 140 | 136 | 431 | 29 | 74 | 476 | 89 | 36 | 720 | 72 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 3 | 0 | 0 | 19 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 69 | 385 | 0 | 136 | 457 | 0 | 74 | 546 | 0 | 36 | 782 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.44 | 0.44 | | 0.44 | 0.44 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 275 | 837 | | 294 | 883 | | 205 | 1408 | | 259 | 1432 | |
| v/s Ratio Prot | | 0.20 | | | c0.23 | | | 0.17 | | | c0.24 | |
| v/s Ratio Perm | 0.11 | | | 0.20 | | | 0.16 | | | 0.06 | | |
| v/c Ratio | 0.25 | 0.46 | | 0.46 | 0.52 | | 0.36 | 0.39 | | 0.14 | 0.55 | |
| Uniform Delay, d1 | 14.2 | 15.8 | | 15.9 | 16.4 | | 15.0 | 15.2 | | 13.5 | 16.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.23 | |
| Incremental Delay, d2 | 2.2 | 1.8 | | 5.2 | 2.2 | | 4.9 | 0.8 | | 0.1 | 0.1 | |
| Delay (s) | 16.4 | 17.7 | | 21.0 | 18.5 | | 19.9 | 16.0 | | 3.8 | 4.0 | |
| Level of Service | B | B | | C | B | | B | B | | A | A | |
| Approach Delay (s) | | 17.5 | | | 19.1 | | | 16.5 | | | 4.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.53 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 80.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 75.2% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|--------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔↔ | | ↔↔ | | | | ↔ | | | ↔ | |
| Volume (vph) | 2 | 883 | 501 | 938 | 41 | 3 | 10 | 9 | 47 | 15 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.98 | | | 0.97 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3078 | | | | 1785 | | | 1819 | |
| Flt Permitted | | 0.95 | | 0.52 | | | | 0.93 | | | 0.56 | |
| Satd. Flow (perm) | | 3011 | | 1617 | | | | 1680 | | | 1060 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 929 | 527 | 987 | 43 | 3 | 11 | 9 | 49 | 16 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 46 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 931 | 0 | 1556 | 0 | 0 | 0 | 26 | 0 | 0 | 19 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 101.2 | | 126.0 | | | | 8.0 | | | 8.0 | |
| Effective Green, g (s) | | 101.2 | | 126.0 | | | | 8.0 | | | 8.0 | |
| Actuated g/C Ratio | | 0.71 | | 0.88 | | | | 0.06 | | | 0.06 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 2131 | | 1425 | | | | 94 | | | 59 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.31 | | c0.96 | | | | 0.02 | | | c0.02 | |
| v/c Ratio | | 0.44 | | 1.64dl | | | | 0.27 | | | 0.33 | |
| Uniform Delay, d1 | | 8.8 | | 8.5 | | | | 64.7 | | | 64.9 | |
| Progression Factor | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.1 | | 53.1 | | | | 1.6 | | | 3.2 | |
| Delay (s) | | 9.0 | | 61.6 | | | | 66.3 | | | 68.1 | |
| Level of Service | | A | | E | | | | E | | | E | |
| Approach Delay (s) | | 9.0 | | 61.6 | | | | 66.3 | | | 68.1 | |
| Approach LOS | | A | | E | | | | E | | | E | |

Intersection Summary

| | | | |
|---|-------|----------------------|-----|
| HCM Average Control Delay | 45.7 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 1.05 | | |
| Actuated Cycle Length (s) | 143.0 | Sum of lost time (s) | 9.0 |
| Intersection Capacity Utilization | 87.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | SBR2 | NER |
|------------------------|--------|-----------|
| Lane Configurations | | FF |
| Volume (vph) | 5 | 311 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | | 3.0 |
| Lane Util. Factor | | 0.88 |
| Frpb, ped/bikes | | 1.00 |
| Flpb, ped/bikes | | 1.00 |
| Frt | | 0.85 |
| Flt Protected | | 1.00 |
| Satd. Flow (prot) | | 2693 |
| Flt Permitted | | 1.00 |
| Satd. Flow (perm) | | 2693 |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 327 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 0 | 327 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 0% |
| Turn Type | custom | |
| Protected Phases | | 7 |
| Permitted Phases | | |
| Actuated Green, G (s) | | 21.8 |
| Effective Green, g (s) | | 21.8 |
| Actuated g/C Ratio | | 0.15 |
| Clearance Time (s) | | 3.0 |
| Vehicle Extension (s) | | 3.0 |
| Lane Grp Cap (vph) | | 411 |
| v/s Ratio Prot | | 0.12 |
| v/s Ratio Perm | | |
| v/c Ratio | | 0.80 |
| Uniform Delay, d1 | | 58.5 |
| Progression Factor | | 1.00 |
| Incremental Delay, d2 | | 10.2 |
| Delay (s) | | 68.7 |
| Level of Service | | E |
| Approach Delay (s) | | |
| Approach LOS | | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|-------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 264 | 965 | 1254 | 177 | 125 | 234 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3285 | 3259 | | 1660 | 1485 |
| Flt Permitted | | 0.49 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1618 | 3259 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 293 | 1072 | 1393 | 197 | 139 | 260 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 113 |
| Lane Group Flow (vph) | 0 | 1365 | 1580 | 0 | 139 | 147 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | Perm |
| Protected Phases | 7 | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 87.0 | 79.0 | | 15.0 | 15.0 |
| Effective Green, g (s) | | 87.0 | 79.0 | | 15.0 | 15.0 |
| Actuated g/C Ratio | | 0.79 | 0.72 | | 0.14 | 0.14 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1340 | 2341 | | 226 | 203 |
| v/s Ratio Prot | | c0.04 | 0.48 | | 0.08 | |
| v/s Ratio Perm | | c0.77 | | | | c0.10 |
| v/c Ratio | | 1.46dl | 0.67 | | 0.62 | 0.72 |
| Uniform Delay, d1 | | 11.5 | 8.5 | | 44.8 | 45.5 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 29.4 | 1.6 | | 11.9 | 20.0 |
| Delay (s) | | 40.9 | 10.1 | | 56.7 | 65.5 |
| Level of Service | | D | B | | E | E |
| Approach Delay (s) | | 40.9 | 10.1 | | 62.4 | |
| Approach LOS | | D | B | | E | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 28.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.97 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 96.1% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013














| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 81 | 1012 | 1347 | 198 | 276 | 88 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3120 | 3139 | | 1506 | 1342 |
| Flt Permitted | | 0.66 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2075 | 3139 | | 1506 | 1342 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 85 | 1065 | 1418 | 208 | 291 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 0 | 1150 | 1608 | 0 | 291 | 53 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 41.0 | 41.0 | | 16.0 | 16.0 |
| Effective Green, g (s) | | 41.0 | 41.0 | | 16.0 | 16.0 |
| Actuated g/C Ratio | | 0.63 | 0.63 | | 0.25 | 0.25 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1309 | 1980 | | 371 | 330 |
| v/s Ratio Prot | | | 0.51 | | 0.19 | |
| v/s Ratio Perm | | 0.55 | | | | 0.04 |
| v/c Ratio | | 0.88 | 0.81 | | 0.78 | 0.16 |
| Uniform Delay, d1 | | 9.9 | 9.1 | | 22.9 | 19.2 |
| Progression Factor | | 1.00 | 1.61 | | 1.47 | 2.02 |
| Incremental Delay, d2 | | 8.6 | 2.3 | | 12.2 | 0.8 |
| Delay (s) | | 18.5 | 16.9 | | 45.9 | 39.6 |
| Level of Service | | B | B | | D | D |
| Approach Delay (s) | | 18.5 | 16.9 | | 44.4 | |
| Approach LOS | | B | B | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 20.9 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.85 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 104.1% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Volume (vph) | 887 | 261 | 532 | 1433 | 205 | 161 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.97 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2404 | | 1788 | 2506 | 1758 | 1530 |
| Flt Permitted | 1.00 | | 0.06 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2404 | | 111 | 2506 | 1758 | 1530 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 905 | 266 | 543 | 1462 | 209 | 164 |
| RTOR Reduction (vph) | 8 | 0 | 0 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 1163 | 0 | 543 | 1462 | 209 | 108 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | | | pm+pt | | | pt+ov |
| Protected Phases | 4 | | 3 | 8 | 2 | 2 3 |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 65.0 | | 96.0 | 96.0 | 24.0 | 57.0 |
| Effective Green, g (s) | 65.0 | | 96.0 | 96.0 | 24.0 | 57.0 |
| Actuated g/C Ratio | 0.50 | | 0.74 | 0.74 | 0.18 | 0.44 |
| Clearance Time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1202 | | 443 | 1851 | 325 | 671 |
| v/s Ratio Prot | 0.48 | | c0.26 | 0.58 | c0.12 | 0.07 |
| v/s Ratio Perm | | | c0.64 | | | |
| v/c Ratio | 0.97 | | 1.23 | 0.79 | 0.64 | 0.16 |
| Uniform Delay, d1 | 31.5 | | 44.5 | 10.7 | 49.0 | 22.1 |
| Progression Factor | 1.06 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 11.9 | | 120.2 | 3.5 | 9.4 | 0.5 |
| Delay (s) | 45.1 | | 164.7 | 14.2 | 58.5 | 22.6 |
| Level of Service | D | | F | B | E | C |
| Approach Delay (s) | 45.1 | | | 54.9 | 42.7 | |
| Approach LOS | D | | | D | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 50.4 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 1.09 | | | |
| Actuated Cycle Length (s) | | | 130.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 107.8% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 2022 | 38 | 112 | 961 | 1 | 62 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.27 | 1.00 | 1.00 | 0.06 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 530 | 3431 | 1479 | 105 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 2247 | 42 | 124 | 1068 | 1 | 69 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 117 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 2247 | 30 | 124 | 1068 | 1 | 0 | 69 | 57 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 61.0 | 61.0 | 61.0 | 71.0 | 71.0 | 71.0 | | 6.0 | 6.0 | | | |
| Effective Green, g (s) | 61.0 | 61.0 | 61.0 | 71.0 | 71.0 | 71.0 | | 6.0 | 6.0 | | | |
| Actuated g/C Ratio | 0.72 | 0.72 | 0.72 | 0.84 | 0.84 | 0.84 | | 0.07 | 0.07 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 380 | 2462 | 1061 | 210 | 2773 | 1278 | | 109 | 106 | | | |
| v/s Ratio Prot | | c0.65 | | c0.05 | 0.32 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.02 | 0.45 | | 0.00 | | c0.04 | 0.04 | | | |
| v/c Ratio | 0.00 | 0.91 | 0.03 | 0.59 | 0.39 | 0.00 | | 0.63 | 0.54 | | | |
| Uniform Delay, d1 | 3.4 | 9.8 | 3.5 | 21.1 | 1.7 | 1.2 | | 38.4 | 38.2 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 6.5 | 0.0 | 4.4 | 0.1 | 0.0 | | 11.4 | 5.1 | | | |
| Delay (s) | 3.4 | 16.4 | 3.5 | 25.5 | 1.8 | 1.2 | | 49.8 | 43.3 | | | |
| Level of Service | A | B | A | C | A | A | | D | D | | | |
| Approach Delay (s) | | 16.1 | | | 4.3 | | | 45.2 | | | 0.0 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.86 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 80.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 11 | 960 | 846 | 30 | 71 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3097 | 3083 | | 1530 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2912 | 3083 | | 1530 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 12 | 1067 | 940 | 33 | 79 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 1079 | 970 | 0 | 87 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1068 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.01 | 0.44 | | 0.73 | |
| Uniform Delay, d1 | | 28.5 | 5.5 | | 40.6 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 30.1 | 0.2 | | 32.1 | |
| Delay (s) | | 58.6 | 0.2 | | 72.7 | |
| Level of Service | | E | A | | E | |
| Approach Delay (s) | | 58.6 | 0.2 | | 72.7 | |
| Approach LOS | | E | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 32.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.77 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 48.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

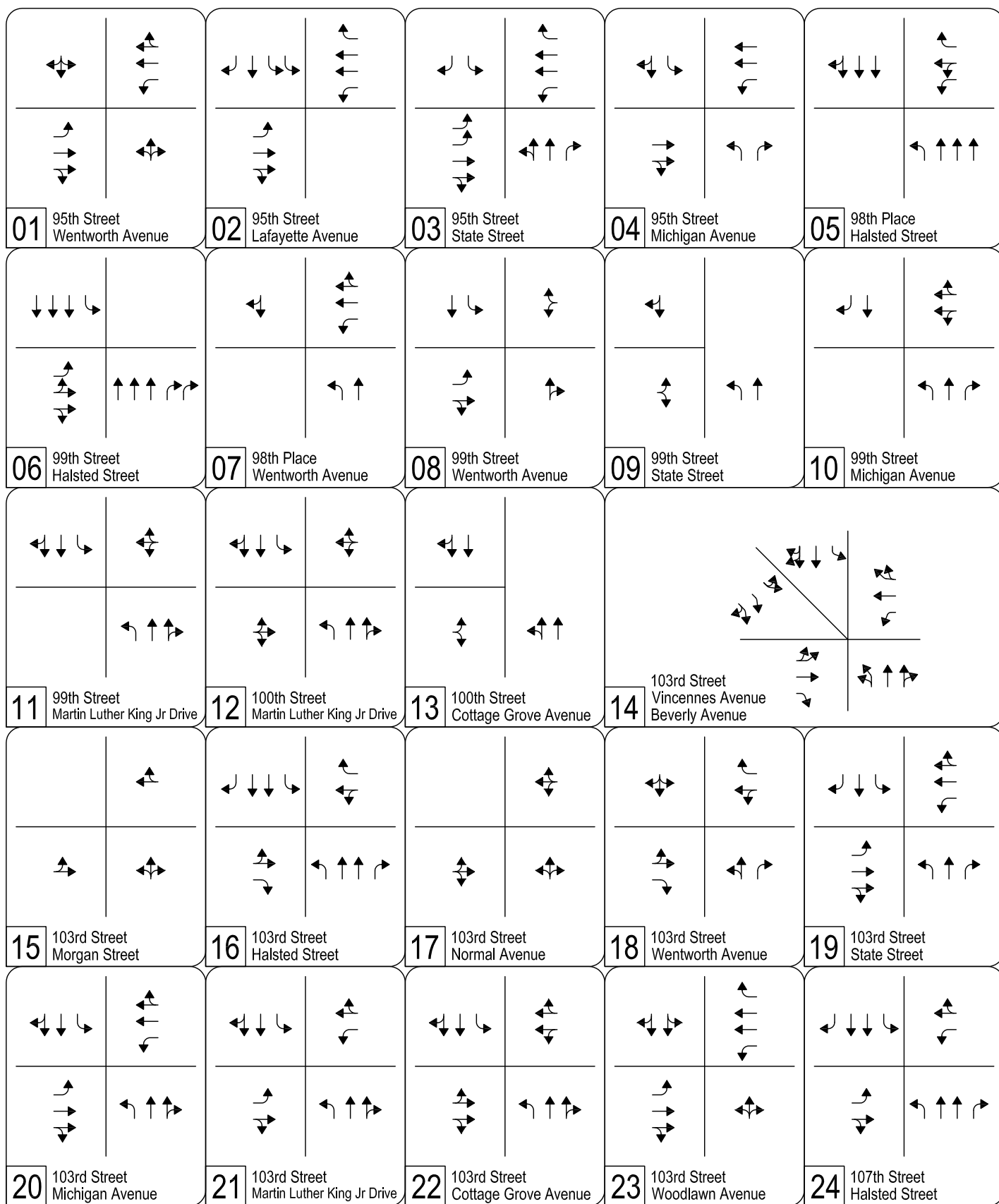
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 107 | 500 | 0 | 1 | 583 | 39 | 3 | 2 | 28 | 202 | 0 | 150 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1765 | | | 3342 | | | 1456 | | | 1665 | 1344 |
| Flt Permitted | | 0.77 | | | 0.95 | | | 0.61 | | | 0.83 | 1.00 |
| Satd. Flow (perm) | | 1373 | | | 3192 | | | 895 | | | 1461 | 1344 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 556 | 0 | 1 | 648 | 43 | 3 | 2 | 31 | 224 | 0 | 167 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 28 | 0 | 0 | 0 | 124 |
| Lane Group Flow (vph) | 0 | 675 | 0 | 0 | 687 | 0 | 0 | 8 | 0 | 0 | 224 | 43 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | pm+pt | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | 3 4 | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 48.0 | | | 62.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 48.0 | | | 62.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.48 | | | 0.62 | | | 0.09 | | | 0.23 | 0.26 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 659 | | | 2000 | | | 81 | | | 365 | 349 |
| v/s Ratio Prot | | | | | c0.05 | | | | | | c0.09 | |
| v/s Ratio Perm | | c0.49 | | | 0.16 | | | 0.01 | | | c0.06 | 0.03 |
| v/c Ratio | | 1.02 | | | 0.34 | | | 0.10 | | | 0.61 | 0.12 |
| Uniform Delay, d1 | | 26.0 | | | 9.2 | | | 41.8 | | | 34.5 | 28.3 |
| Progression Factor | | 1.00 | | | 0.13 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 41.4 | | | 0.3 | | | 2.4 | | | 7.5 | 0.7 |
| Delay (s) | | 67.4 | | | 1.4 | | | 44.1 | | | 42.0 | 29.0 |
| Level of Service | | E | | | A | | | D | | | D | C |
| Approach Delay (s) | | 67.4 | | | 1.4 | | | 44.1 | | | 36.5 | |
| Approach LOS | | E | | | A | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 81.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Appendix E Halsted Rail Alternative

Halsted Rail Alternative Project Traffic Estimates

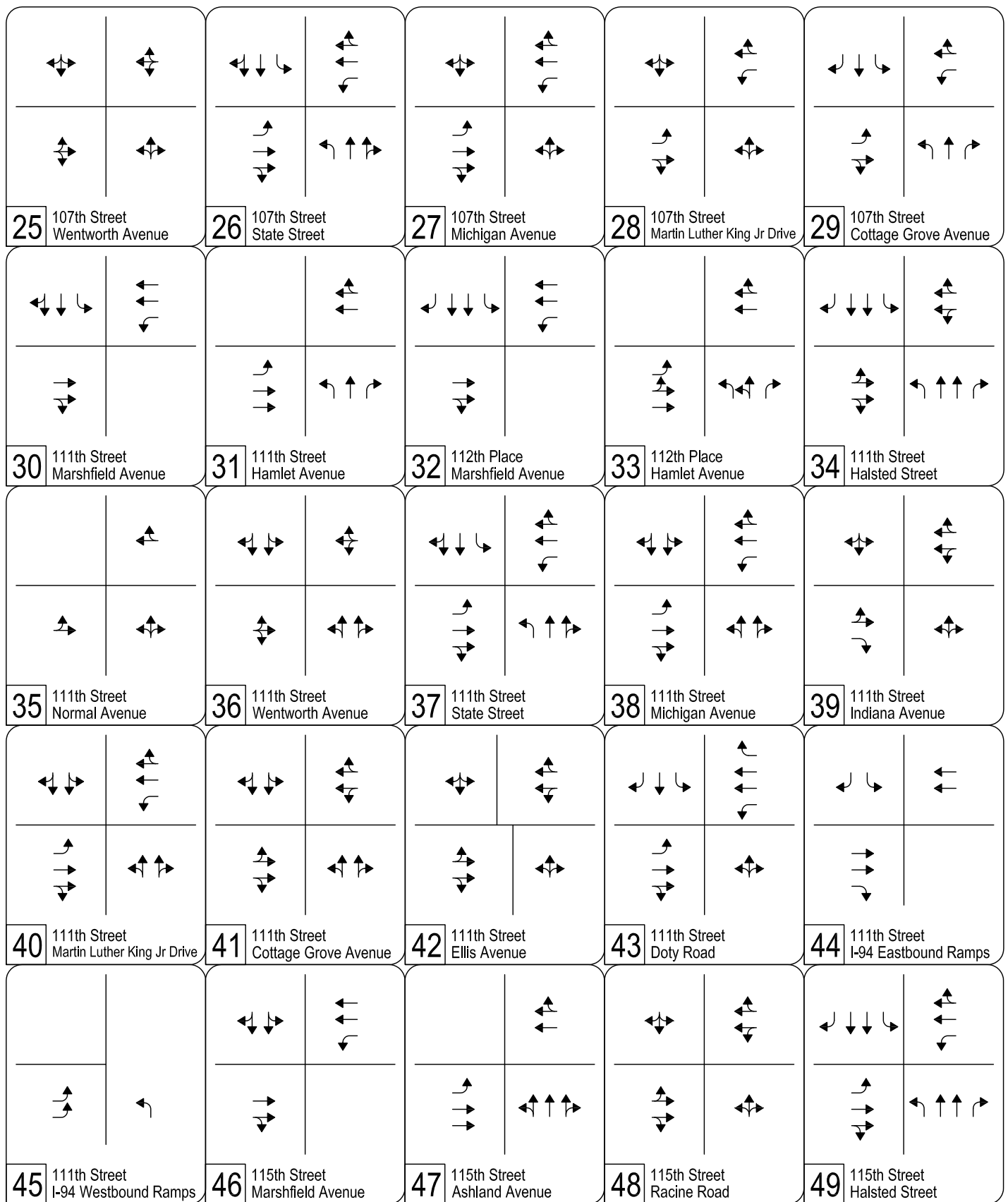
| ITE Land Use | Unit | Trip Generation Rate | | | Peak Hour Direction | | | |
|-------------------------------|----------------|----------------------|--------------|--------------|---------------------|--------|-------|--------|
| | | Daily | AM Peak Hour | PM Peak Hour | AM In | AM Out | PM In | PM Out |
| Light Rail with Park and Ride | Parking Spaces | 2.51 | 1.07 | 1.24 | 80% | 20% | 20% | 80% |

| Halsted Rail Alternative Park and Ride Facilities | | Estimated Project Traffic | | | | | | |
|---|----------------|---------------------------|--------------|------------|--------------|------------|--------------|--------------|
| Location | Parking Spaces | Daily | AM In | AM Out | AM Total | PM In | PM Out | PM Total |
| 103rd Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| 111th Street | 200 | 502 | 171 | 43 | 214 | 50 | 198 | 248 |
| 119th Street | 1,000 | 2,510 | 856 | 214 | 1,070 | 248 | 992 | 1,240 |
| Vermont Avenue | 2,300 | 5,773 | 1,969 | 492 | 2,461 | 570 | 2,282 | 2,852 |
| Total | 3,700 | 9,287 | 3,167 | 792 | 3,959 | 918 | 3,670 | 4,588 |



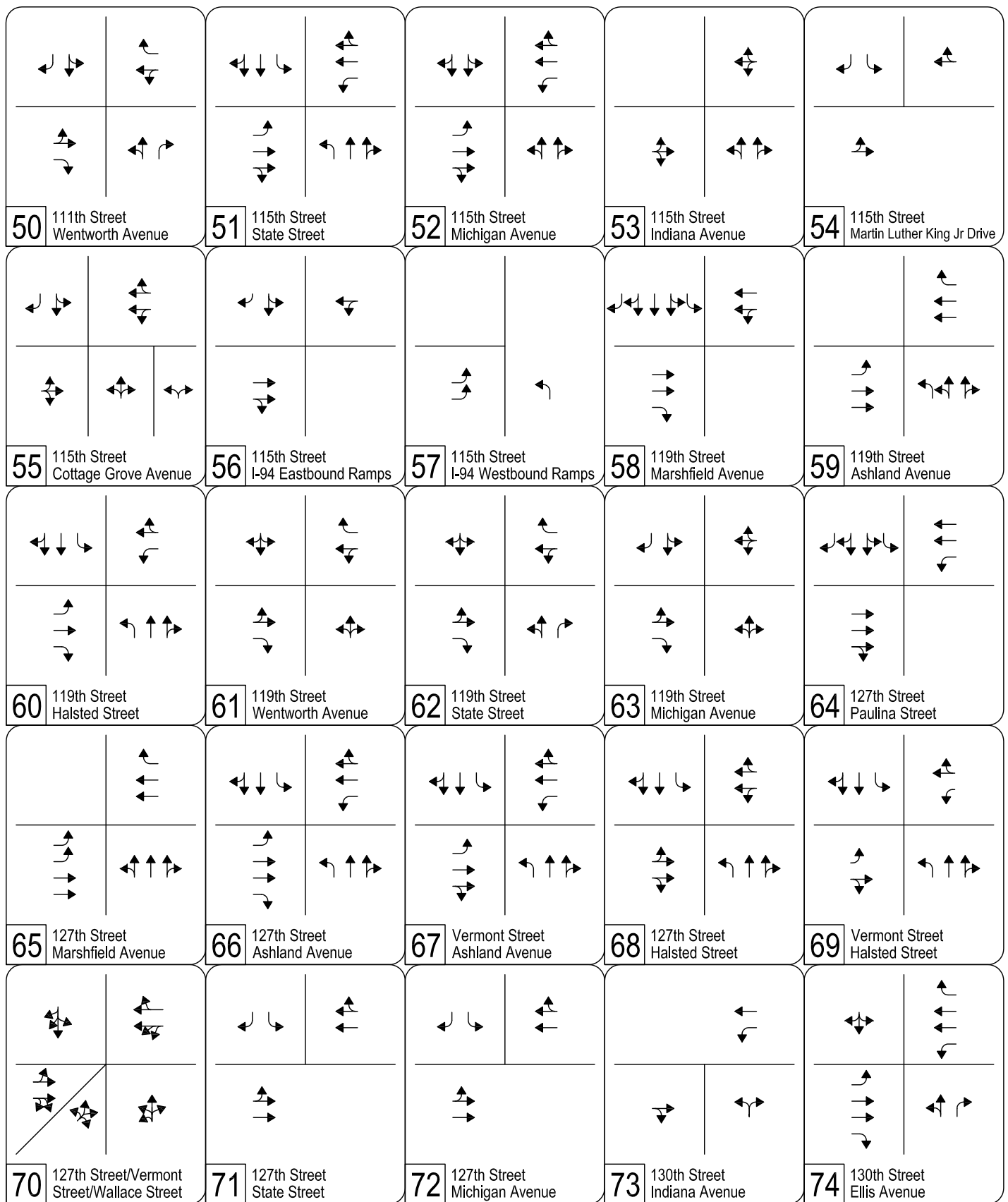
Halsted Rail Alternative (2026) Intersection Lane Geometry

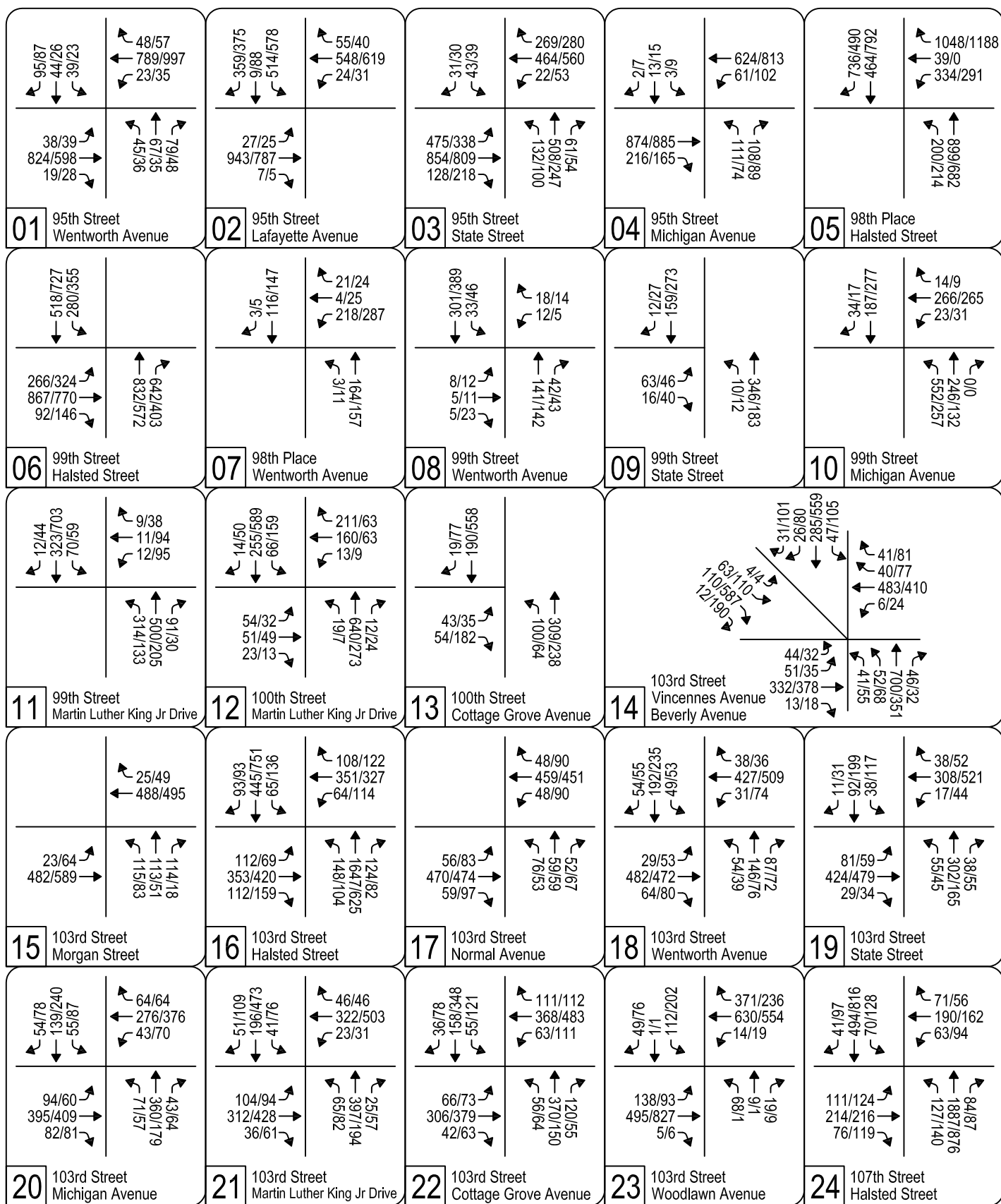
Page 1 of 3



Halsted Rail Alternative (2026) Intersection Lane Geometry

Page 2 of 3

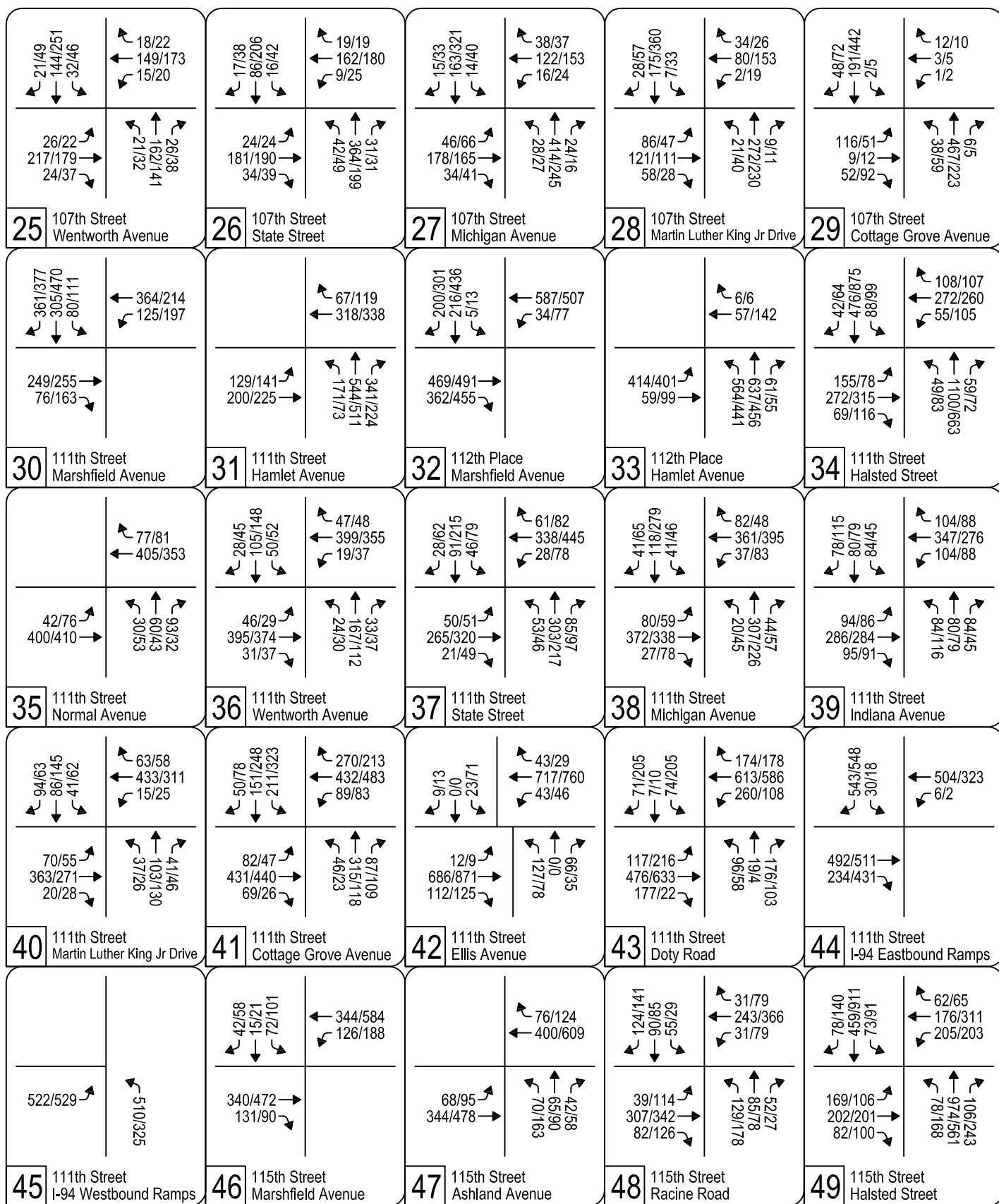




Halsted Rail Alternative (2026) Intersection Traffic Volumes

Page 1 of 3

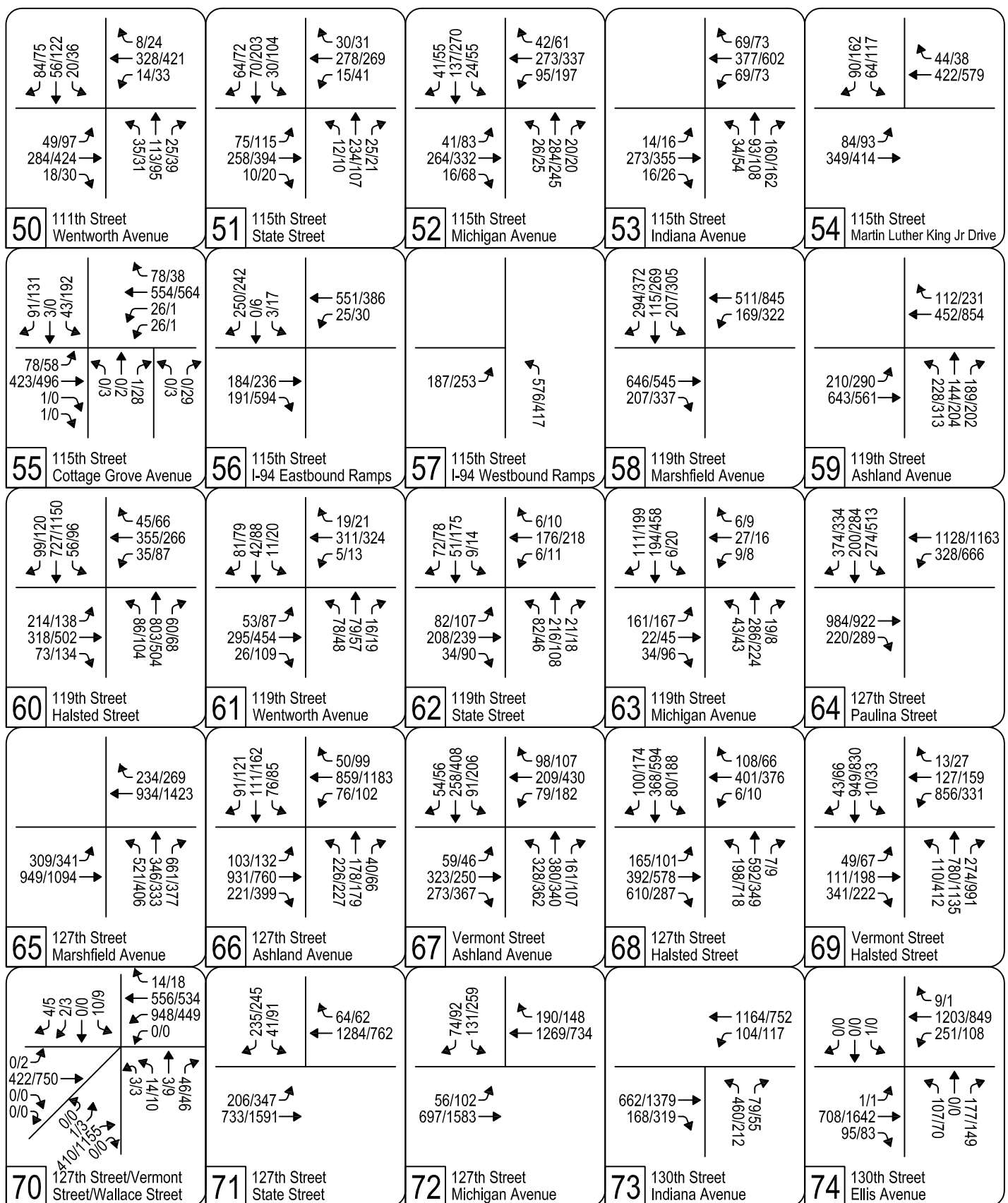
Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative (2026) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative (2026) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 38 | 824 | 19 | 23 | 789 | 48 | 45 | 67 | 79 | 39 | 44 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1416 | 2975 | | 1592 | 2978 | | | 1754 | | | 1673 | |
| Flt Permitted | 0.26 | 1.00 | | 0.26 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 384 | 2975 | | 429 | 2978 | | | 1597 | | | 1533 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 40 | 867 | 20 | 24 | 831 | 51 | 47 | 71 | 83 | 41 | 46 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 63 | 0 |
| Lane Group Flow (vph) | 40 | 885 | 0 | 24 | 875 | 0 | 0 | 162 | 0 | 0 | 124 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 201 | 1556 | | 224 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | | c0.30 | | | 0.29 | | | | | | | |
| v/s Ratio Perm | 0.10 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.20 | 0.57 | | 0.11 | 0.56 | | | 0.29 | | | 0.23 | |
| Uniform Delay, d1 | 8.3 | 10.5 | | 7.8 | 10.5 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.82 | 1.13 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.2 | 1.5 | | 0.8 | 1.3 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.5 | 12.0 | | 7.2 | 13.1 | | | 16.4 | | | 15.8 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.0 | | | 12.9 | | | 16.4 | | | 15.8 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 943 | 7 | 24 | 548 | 55 | 0 | 0 | 0 | 514 | 9 | 359 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 776 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 355 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 993 | 7 | 25 | 577 | 58 | 0 | 0 | 0 | 541 | 9 | 378 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 999 | 0 | 25 | 577 | 33 | 0 | 0 | 0 | 541 | 9 | 206 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 163 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.30 | | 0.01 | c0.18 | | | | | c0.17 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.15 |
| v/c Ratio | 0.17 | 0.92 | | 0.04 | 0.33 | 0.11 | | | | 0.76 | 0.03 | 0.64 |
| Uniform Delay, d1 | 31.6 | 41.8 | | 15.1 | 15.3 | 13.3 | | | | 46.6 | 38.7 | 45.1 |
| Progression Factor | 0.80 | 0.83 | | 0.30 | 0.63 | 1.55 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 12.2 | | 0.1 | 0.3 | 0.5 | | | | 7.3 | 0.2 | 9.2 |
| Delay (s) | 27.2 | 46.8 | | 4.6 | 10.0 | 21.2 | | | | 53.9 | 38.9 | 54.3 |
| Level of Service | C | D | | A | A | C | | | | D | D | D |
| Approach Delay (s) | | 46.2 | | | 10.8 | | 0.0 | | | | 54.0 | |
| Approach LOS | | D | | | B | | A | | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.0 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 51.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 475 | 854 | 128 | 22 | 464 | 269 | 132 | 508 | 61 | 43 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 500 | 899 | 135 | 23 | 488 | 283 | 139 | 535 | 64 | 45 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 161 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 500 | 1026 | 0 | 23 | 488 | 122 | 0 | 674 | 39 | 45 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.33 | | 0.01 | c0.17 | | | c0.20 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.13 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.47 | 0.66 | | 0.21 | 0.70 | 0.54 | | 0.88 | 0.12 | 0.85 | | 0.05 |
| Uniform Delay, d1 | 34.5 | 24.3 | | 57.2 | 45.3 | 43.3 | | 48.3 | 39.5 | 60.4 | | 57.4 |
| Progression Factor | 0.75 | 0.19 | | 1.00 | 1.00 | 1.00 | | 0.95 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 5.8 | 9.0 | | 14.1 | 0.7 | 70.0 | | 0.4 |
| Delay (s) | 26.6 | 5.7 | | 61.6 | 51.0 | 52.3 | | 59.8 | 36.2 | 130.4 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.5 | | | 51.8 | | | 57.7 | | | 99.7 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.2 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 71.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 874 | 216 | 61 | 624 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 283 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 971 | 240 | 68 | 693 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1189 | 0 | 68 | 693 | 0 | 123 | 0 | 38 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | 2 | | 2 | | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1716 | | 170 | 1803 | | 350 | | 469 | 577 | 622 | |
| v/s Ratio Prot | | c0.42 | | | 0.23 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.24 | | c0.11 | | | 0.03 | 0.00 | | |
| v/c Ratio | | 0.69 | | 0.40 | 0.38 | | 0.35 | | 0.08 | 0.01 | 0.02 | |
| Uniform Delay, d1 | | 13.7 | | 10.5 | 10.4 | | 26.0 | | 23.7 | 23.2 | 23.3 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.3 | | 6.9 | 0.6 | | 2.8 | | 0.3 | 0.0 | 0.1 | |
| Delay (s) | | 16.0 | | 17.4 | 11.0 | | 28.8 | | 24.1 | 23.2 | 23.4 | |
| Level of Service | | B | | B | B | | C | | C | C | C | |
| Approach Delay (s) | | 16.0 | | | 11.6 | | | 26.5 | | | 23.3 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.8% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street


1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 334 | 39 | 1048 | 200 | 899 | 0 | 0 | 464 | 736 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3938 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3938 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 341 | 40 | 1069 | 204 | 917 | 0 | 0 | 473 | 751 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 341 | 40 | 1069 | 204 | 917 | 0 | 0 | 1224 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.31 | |
| v/s Ratio Perm | | | | 0.22 | 0.02 | c0.72 | | | | | | |
| v/c Ratio | | | | 0.76 | 0.08 | 2.53 | 0.43 | 0.33 | | | 1.87dr | |
| Uniform Delay, d1 | | | | 33.6 | 26.7 | 37.5 | 29.2 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.37 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.3 | 0.3 | 694.2 | 2.0 | 0.2 | | | 41.3 | |
| Delay (s) | | | | 44.9 | 27.1 | 731.7 | 21.2 | 22.0 | | | 78.3 | |
| Level of Service | | | | D | C | F | C | C | | | E | |
| Approach Delay (s) | | 0.0 | | | 550.8 | | | 21.8 | | | 78.3 | |
| Approach LOS | | A | | | F | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 242.1 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 94.6% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|------|------|----------------------|------|-------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↰ | ↷ | | | | | | ↷ | ↷ | ↰ | ↷ | |
| Volume (vph) | 266 | 867 | 92 | 0 | 0 | 0 | 0 | 832 | 642 | 280 | 518 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 274 | 894 | 95 | 0 | 0 | 0 | 0 | 858 | 662 | 289 | 534 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 247 | 1009 | 0 | 0 | 0 | 0 | 0 | 858 | 662 | 289 | 534 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.18 | 0.12 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.30 | | | |
| v/c Ratio | 0.51 | 0.98 | | | | | | 0.74 | 1.14 | 0.62 | 0.20 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.1 | 38.5 | 31.9 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.44 | 0.46 | 1.06 | 0.43 | |
| Incremental Delay, d2 | 3.8 | 23.4 | | | | | | 0.4 | 63.2 | 2.4 | 0.1 | |
| Delay (s) | 32.5 | 58.5 | | | | | | 15.7 | 81.0 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.4 | | | 0.0 | | | 44.1 | | | 15.5 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.9 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.91 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 94.6% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | |  |  | |  |  | | |  | | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 164 | 0 | 0 | 116 | 3 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 781 | 1882 | | | 1961 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 182 | 0 | 0 | 129 | 3 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 182 | 0 | 0 | 131 | 0 | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% | |
| Turn Type | Perm | | | pm+pt | | | | | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 40.0 |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 46.0 |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.54 |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 |
| Lane Grp Cap (vph) | | | | 501 | | | 861 | | | 501 | | | 1061 |
| v/s Ratio Prot | | | | | | | 0.00 | | | c0.10 | | | 0.07 |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | | |
| v/c Ratio | | | | 0.48 | | | 0.01 | | | 0.01 | | | 0.12 |
| Uniform Delay, d1 | | | | 23.4 | | | 19.9 | | | 10.0 | | | 9.6 |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.05 | | | 1.00 |
| Incremental Delay, d2 | | | | 3.3 | | | 0.0 | | | 0.0 | | | 0.2 |
| Delay (s) | | | | 26.7 | | | 19.9 | | | 10.5 | | | 9.8 |
| Level of Service | | | | C | | | B | | | B | | | A |
| Approach Delay (s) | 0.0 | | | | | | 26.0 | | | 9.7 | | | 9.8 |
| Approach LOS | A | | | | | | C | | | A | | | A |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 141 | 42 | 33 | 301 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1685 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1685 | | 1010 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 148 | 44 | 35 | 317 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 179 | 0 | 35 | 317 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 642 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.3 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.93 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.8 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 16 | 10 | 346 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 384 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 384 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.39 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.17 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.5 | |
| Delay (s) | 16.0 | | 2.1 | 5.3 | 9.0 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.2 | 9.0 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue

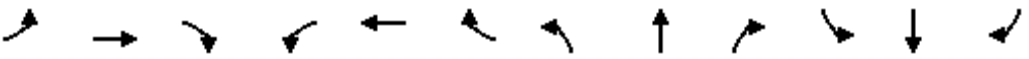
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 23 | 266 | 14 | 552 | 246 | 0 | 0 | 187 | 34 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3737 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.58 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3737 | | 1013 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 296 | 16 | 613 | 273 | 0 | 0 | 208 | 38 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 334 | 0 | 613 | 273 | 0 | 0 | 208 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 684 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.43 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.90 | 0.26 | | | 0.29 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 16.8 | 8.1 | | | 14.9 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 16.7 | 0.6 | | | 1.0 | 0.1 |
| Delay (s) | | | | | 23.1 | | 33.5 | 8.7 | | | 16.0 | 13.3 |
| Level of Service | | | | | C | | C | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 25.9 | | | 15.5 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.5 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.68 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.6% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

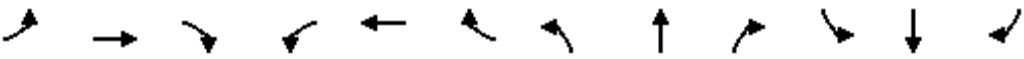
1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 12 | 11 | 9 | 314 | 500 | 91 | 70 | 323 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1794 | | 1691 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.51 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | | | | 1794 | | 917 | 3237 | | 600 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 13 | 12 | 10 | 349 | 556 | 101 | 78 | 359 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 28 | 0 | 349 | 637 | 0 | 78 | 369 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 550 | | 574 | 1467 | | 431 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.20 | | 0.02 | 0.11 | |
| v/s Ratio Perm | | | | | | | c0.28 | | | 0.08 | | |
| v/c Ratio | | | | | 0.05 | | 0.61 | 0.43 | | 0.18 | 0.24 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.0 | 14.0 | | 11.8 | 12.6 | |
| Progression Factor | | | | | 1.00 | | 0.71 | 0.73 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 4.4 | 0.9 | | 0.9 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 13.6 | 11.0 | | 12.7 | 13.0 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 11.9 | | | 12.9 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 54 | 51 | 23 | 13 | 160 | 211 | 19 | 640 | 12 | 66 | 255 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1945 | | | 1625 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.71 | | | 0.99 | | 0.58 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | | 1411 | | | 1612 | | 971 | 3232 | | 605 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 54 | 24 | 14 | 168 | 222 | 20 | 674 | 13 | 69 | 268 | 15 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 124 | 0 | 0 | 345 | 0 | 20 | 685 | 0 | 69 | 278 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 470 | | | 537 | | 544 | 1810 | | 339 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.21 | | | 0.09 | |
| v/s Ratio Perm | | 0.09 | | | c0.21 | | 0.02 | | | 0.11 | | |
| v/c Ratio | | 0.26 | | | 0.64 | | 0.04 | 0.38 | | 0.20 | 0.16 | |
| Uniform Delay, d1 | | 18.3 | | | 21.2 | | 7.4 | 9.2 | | 8.2 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.15 | 0.05 | |
| Incremental Delay, d2 | | 1.4 | | | 5.8 | | 0.1 | 0.6 | | 1.3 | 0.2 | |
| Delay (s) | | 19.7 | | | 27.0 | | 7.5 | 9.8 | | 2.5 | 0.6 | |
| Level of Service | | B | | | C | | A | A | | A | A | |
| Approach Delay (s) | | 19.7 | | | 27.0 | | | 9.8 | | | 1.0 | |
| Approach LOS | | B | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 67.0% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 43 | 54 | 100 | 309 | 190 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 48 | 60 | 111 | 343 | 211 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 108 | 226 | 229 | 141 | 91 | |
| Volume Left (vph) | 48 | 111 | 0 | 0 | 0 | |
| Volume Right (vph) | 60 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.09 | 0.08 | -0.08 | |
| Departure Headway (s) | 5.2 | 5.4 | 5.1 | 5.3 | 5.2 | |
| Degree Utilization, x | 0.16 | 0.34 | 0.33 | 0.21 | 0.13 | |
| Capacity (veh/h) | 634 | 657 | 688 | 648 | 667 | |
| Control Delay (s) | 9.2 | 9.9 | 9.4 | 8.6 | 7.8 | |
| Approach Delay (s) | 9.2 | 9.6 | | 8.2 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.1 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 34.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 44 | 51 | 332 | 13 | 6 | 483 | 40 | 41 | 41 | 52 | 700 | 46 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3289 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.41 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 975 | 1731 | 1487 | | | 737 | 3289 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 57 | 369 | 14 | 7 | 537 | 44 | 46 | 46 | 58 | 778 | 51 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 106 | 369 | 7 | 7 | 537 | 58 | 0 | 0 | 104 | 824 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 297 | 528 | 453 | | | 175 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.21 | | | c0.31 | | | | | c0.25 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.14 | | |
| v/c Ratio | | 0.38 | 0.45 | 0.01 | 0.02 | 1.02 | 0.13 | | | 0.59 | 1.05 | |
| Uniform Delay, d1 | | 20.3 | 18.3 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.5 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.8 | 1.8 | 0.0 | 0.1 | 43.5 | 0.6 | | | 14.0 | 47.0 | |
| Delay (s) | | 24.1 | 20.1 | 14.5 | 25.7 | 80.0 | 27.0 | | | 49.5 | 87.0 | |
| Level of Service | | C | C | B | C | F | C | | | D | F | |
| Approach Delay (s) | | | 20.8 | | | 71.9 | | | | | 82.8 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.5 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 79.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 47 | 285 | 26 | 31 | 4 | 63 | 110 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3280 | | | | 1710 | 2622 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3280 | | | | 1710 | 2622 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 317 | 29 | 34 | 4 | 70 | 122 | 13 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 52 | 373 | 0 | 0 | 0 | 74 | 128 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.11 | | | | 0.04 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.05 | |
| v/c Ratio | 0.76 | 0.49 | | | | 0.26 | 0.29 | |
| Uniform Delay, d1 | 37.6 | 34.8 | | | | 38.1 | 38.3 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 56.2 | 2.2 | | | | 2.2 | 1.7 | |
| Delay (s) | 93.8 | 37.0 | | | | 40.3 | 40.0 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 43.9 | | | | 40.1 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 23 | 482 | 0 | 0 | 488 | 25 | 115 | 113 | 114 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1771 | | | | |
| Flt Permitted | | 0.97 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1600 | | | 1930 | | | 1771 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 26 | 536 | 0 | 0 | 542 | 28 | 128 | 126 | 127 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 562 | 0 | 0 | 570 | 0 | 0 | 381 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 763 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.74 | | | 0.62 | | | 0.54 | | | | |
| Uniform Delay, d1 | | 13.7 | | | 12.6 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.3 | | | 3.1 | | | 2.9 | | | | |
| Delay (s) | | 20.0 | | | 15.8 | | | 17.8 | | | | |
| Level of Service | | B | | | B | | | B | | | | |
| Approach Delay (s) | | 20.0 | | | 15.8 | | | 17.8 | | | 0.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 112 | 353 | 112 | 64 | 351 | 108 | 148 | 1647 | 124 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1923 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.56 | 1.00 | | 0.64 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1081 | 1426 | | 1239 | 1396 | 625 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 118 | 372 | 118 | 67 | 369 | 114 | 156 | 1734 | 131 | 68 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 70 | 0 | 0 | 67 | 0 | 0 | 29 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 490 | 48 | 0 | 436 | 47 | 156 | 1734 | 102 | 68 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.51 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 443 | 584 | | 507 | 572 | 389 | 1310 | 543 | 147 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.56 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.45 | 0.03 | | 0.35 | 0.03 | 0.17 | | 0.08 | 0.19 | | 0.03 |
| v/c Ratio | | 1.11 | 0.08 | | 0.86 | 0.08 | 0.40 | 1.32 | 0.19 | 0.46 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 31.0 | 18.9 | | 28.3 | 18.9 | 14.7 | 30.3 | 19.0 | 23.1 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.10 | 0.76 | 0.40 |
| Incremental Delay, d2 | | 74.8 | 0.3 | | 17.1 | 0.3 | 0.7 | 151.1 | 0.8 | 2.2 | 0.9 | 0.3 |
| Delay (s) | | 105.8 | 19.2 | | 45.4 | 19.2 | 15.4 | 181.4 | 19.8 | 27.7 | 17.8 | 8.1 |
| Level of Service | | F | B | | D | B | B | F | B | C | B | A |
| Approach Delay (s) | | 89.0 | | | 40.0 | | | 158.1 | | | 17.3 | |
| Approach LOS | | F | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 106.6 | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | | 1.16 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 114.6% | | | | ICU Level of Service | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 56 | 470 | 59 | 48 | 459 | 48 | 76 | 59 | 52 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1631 | | | 1779 | | | | |
| Flt Permitted | | 0.91 | | | 0.92 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1483 | | | 1500 | | | 1779 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 522 | 66 | 53 | 510 | 53 | 84 | 66 | 58 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 644 | 0 | 0 | 611 | 0 | 0 | 187 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 867 | | | 877 | | | 520 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.43 | | | 0.41 | | | 0.10 | | | | |
| v/c Ratio | | 0.74 | | | 0.70 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.9 | | | 9.5 | | | 18.2 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.7 | | | 4.6 | | | 1.9 | | | | |
| Delay (s) | | 15.6 | | | 14.0 | | | 20.1 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 15.6 | | | 14.0 | | | 20.1 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 62.5% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

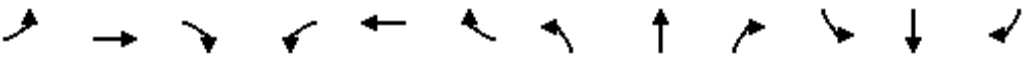










1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|------|----------------------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 29 | 482 | 64 | 31 | 427 | 38 | 54 | 146 | 87 | 49 | 192 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1737 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1596 | 1255 | | 1558 | 1288 | | 1418 | 1490 | | 1608 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 31 | 507 | 67 | 33 | 449 | 40 | 57 | 154 | 92 | 52 | 202 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 29 | 0 | 0 | 16 | 0 | 0 | 63 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 538 | 38 | 0 | 482 | 24 | 0 | 211 | 29 | 0 | 300 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 915 | 720 | | 893 | 738 | | 454 | 477 | | 515 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.03 | | 0.31 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.59 | 0.05 | | 0.54 | 0.03 | | 0.46 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.3 | 7.0 | | 9.9 | 7.0 | | 20.4 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.8 | 0.1 | | 2.3 | 0.1 | | 3.4 | 0.2 | | 4.8 | |
| Delay (s) | | 13.1 | 7.2 | | 12.2 | 7.0 | | 23.8 | 17.9 | | 26.1 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 12.4 | | | 11.8 | | | 22.0 | | | 26.1 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 93.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 81 | 424 | 29 | 17 | 308 | 38 | 55 | 302 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1463 | 2990 | | 1459 | 3534 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.52 | 1.00 | | 0.44 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 800 | 2990 | | 674 | 3534 | | 1116 | 1647 | 1301 | 722 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 471 | 32 | 19 | 342 | 42 | 61 | 336 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 15 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 90 | 495 | 0 | 19 | 369 | 0 | 61 | 336 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 382 | 1426 | | 321 | 1685 | | 446 | 659 | 520 | 289 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.10 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.11 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.24 | 0.35 | | 0.06 | 0.22 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.0 | 10.7 | | 9.2 | 9.9 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.76 | 0.34 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.4 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.0 | 0.6 | 0.0 |
| Delay (s) | 11.5 | 11.3 | | 9.5 | 10.2 | | 8.3 | 13.9 | 4.2 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.3 | | | 10.2 | | | 12.2 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 94 | 395 | 82 | 43 | 276 | 64 | 71 | 360 | 43 | 55 | 139 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1464 | 3057 | | 1588 | 3008 | | 1541 | 3021 | | 1402 | 2764 | |
| Flt Permitted | 0.53 | 1.00 | | 0.43 | 1.00 | | 0.62 | 1.00 | | 0.47 | 1.00 | |
| Satd. Flow (perm) | 816 | 3057 | | 723 | 3008 | | 1013 | 3021 | | 691 | 2764 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 99 | 416 | 86 | 45 | 291 | 67 | 75 | 379 | 45 | 58 | 146 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 99 | 502 | 0 | 45 | 358 | 0 | 75 | 412 | 0 | 58 | 170 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 392 | 1467 | | 347 | 1444 | | 419 | 1249 | | 286 | 1142 | |
| v/s Ratio Prot | c0.16 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | 0.07 | | | 0.08 | | |
| v/c Ratio | 0.25 | 0.34 | | 0.13 | 0.25 | | 0.18 | 0.33 | | 0.20 | 0.15 | |
| Uniform Delay, d1 | 11.5 | 12.1 | | 10.8 | 11.5 | | 13.9 | 14.9 | | 14.1 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.5 | 0.6 | | 0.8 | 0.4 | | 0.9 | 0.7 | | 1.6 | 0.3 | |
| Delay (s) | 13.1 | 12.8 | | 11.6 | 11.9 | | 14.9 | 15.6 | | 15.7 | 14.0 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 11.9 | | | 15.5 | | | 14.4 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 49.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

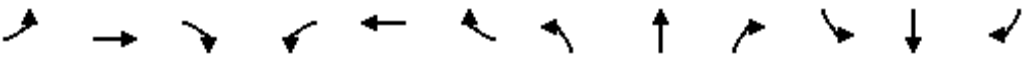
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 104 | 312 | 36 | 23 | 322 | 46 | 65 | 397 | 25 | 41 | 196 | 51 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1575 | | 1473 | 1841 | | 1533 | 3073 | | 1372 | 2880 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | 0.59 | 1.00 | | 0.43 | 1.00 | |
| Satd. Flow (perm) | 731 | 1575 | | 743 | 1841 | | 954 | 3073 | | 622 | 2880 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 109 | 328 | 38 | 24 | 339 | 48 | 68 | 418 | 26 | 43 | 206 | 54 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 109 | 366 | 0 | 24 | 387 | 0 | 68 | 444 | 0 | 43 | 260 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 453 | 737 | | 372 | 793 | | 332 | 730 | | 199 | 630 | |
| v/s Ratio Prot | c0.01 | c0.23 | | 0.00 | 0.21 | | c0.01 | c0.14 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | | 0.05 | | |
| v/c Ratio | 0.24 | 0.50 | | 0.06 | 0.49 | | 0.20 | 0.61 | | 0.22 | 0.41 | |
| Uniform Delay, d1 | 13.2 | 15.7 | | 14.5 | 17.4 | | 21.5 | 28.9 | | 25.7 | 28.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.4 | | 0.1 | 2.1 | | 0.3 | 3.7 | | 0.5 | 2.0 | |
| Delay (s) | 13.5 | 18.0 | | 14.6 | 19.6 | | 21.8 | 32.6 | | 26.2 | 30.5 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.0 | | | 19.3 | | | 31.2 | | | 29.9 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|-------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↔ | ↔↔ | | ↔ | ↔↔ | |
| Volume (vph) | 66 | 306 | 42 | 63 | 368 | 111 | 56 | 370 | 120 | 55 | 158 | 36 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3492 | | | 2912 | | 1614 | 3156 | | 1580 | 2921 | |
| Flt Permitted | | 0.79 | | | 0.85 | | 0.62 | 1.00 | | 0.40 | 1.00 | |
| Satd. Flow (perm) | | 2778 | | | 2478 | | 1047 | 3156 | | 658 | 2921 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 340 | 47 | 70 | 409 | 123 | 62 | 411 | 133 | 61 | 176 | 40 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 460 | 0 | 0 | 602 | 0 | 62 | 544 | 0 | 61 | 216 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1259 | | | 1123 | | 461 | 1389 | | 290 | 1285 | |
| v/s Ratio Prot | | | | | | | c0.17 | | | | 0.07 | |
| v/s Ratio Perm | | 0.17 | | | c0.24 | | 0.06 | | | 0.09 | | |
| v/c Ratio | | 0.37 | | | 0.54 | | 0.13 | 0.39 | | 0.21 | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 14.8 | | 12.5 | 14.2 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | | 1.8 | | 0.6 | 0.8 | | 1.6 | 0.3 | |
| Delay (s) | | 14.3 | | | 16.6 | | 13.1 | 15.0 | | 14.6 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.3 | | | 16.6 | | | 14.8 | | | 13.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.0 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 62.4% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 138 | 495 | 5 | 14 | 630 | 371 | 68 | 9 | 19 | 112 | 1 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3143 | | 1629 | 3257 | 1457 | | 1612 | | | 3106 | |
| Flt Permitted | 0.37 | 1.00 | | 0.44 | 1.00 | 1.00 | | 0.70 | | | 0.75 | |
| Satd. Flow (perm) | 607 | 3143 | | 749 | 3257 | 1457 | | 1174 | | | 2411 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 153 | 550 | 6 | 16 | 700 | 412 | 76 | 10 | 21 | 124 | 1 | 54 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 143 | 0 | 12 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 153 | 555 | 0 | 16 | 700 | 269 | 0 | 95 | 0 | 0 | 138 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | Perm | | | Perm | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.4 | | | 16.4 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.23 | | | 0.23 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 397 | 2054 | | 489 | 2128 | 952 | | 273 | | | 562 | |
| v/s Ratio Prot | 0.18 | | | 0.21 | | | | | | | | |
| v/s Ratio Perm | c0.25 | | | 0.02 | | 0.18 | c0.08 | | | 0.06 | | |
| v/c Ratio | 0.39 | 0.27 | | 0.03 | 0.33 | 0.28 | | 0.35 | | | 0.24 | |
| Uniform Delay, d1 | 5.7 | 5.1 | | 4.3 | 5.4 | 5.2 | | 22.5 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.8 | 0.3 | | 0.1 | 0.4 | 0.7 | | 3.3 | | | 1.0 | |
| Delay (s) | 8.5 | 5.5 | | 4.4 | 5.8 | 5.9 | | 25.8 | | | 22.9 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.1 | | | 5.8 | | | 25.8 | | | 22.9 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.4 | | | HCM Level of Service | | | | A | | | | |
| HCM Volume to Capacity ratio | 0.38 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.4 | | | Sum of lost time (s) | | | | 8.0 | | | | |
| Intersection Capacity Utilization | 54.8% | | | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 76 | 63 | 190 | 71 | 127 | 1887 | 84 | 70 | 494 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1498 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1498 | | 521 | 1584 | | 617 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 80 | 66 | 200 | 75 | 134 | 1986 | 88 | 74 | 520 | 43 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 290 | 0 | 66 | 259 | 0 | 134 | 1986 | 70 | 74 | 520 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 388 | | 232 | 410 | | 352 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.65 | | c0.03 | 0.17 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.15 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.38 | 1.57 | 0.13 | 0.43 | 0.42 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.71 | 0.49 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.4 | | 3.1 | 7.2 | | 2.6 | 260.3 | 0.4 | 7.4 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.4 | | 24.9 | 35.2 | | 10.8 | 278.0 | 8.0 | 25.6 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.8 | | | 33.2 | | | 251.0 | | | 19.4 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 164.6 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.11 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 94.2% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 217 | 24 | 15 | 149 | 18 | 21 | 162 | 26 | 32 | 144 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1843 | | | 1836 | | | 1900 | | | 1930 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1787 | | | 1790 | | | 1844 | | | 1824 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 224 | 25 | 15 | 154 | 19 | 22 | 167 | 27 | 33 | 148 | 22 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 271 | 0 | 0 | 182 | 0 | 0 | 208 | 0 | 0 | 196 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 742 | | | 744 | | | 851 | | | 842 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.11 | | | 0.11 | |
| v/c Ratio | | 0.36 | | | 0.24 | | | 0.24 | | | 0.23 | |
| Uniform Delay, d1 | | 13.1 | | | 12.4 | | | 10.6 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.62 | | | 1.09 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 0.8 | | | 0.6 | | | 0.6 | |
| Delay (s) | | 14.5 | | | 8.5 | | | 12.2 | | | 11.2 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.5 | | | 8.5 | | | 12.2 | | | 11.2 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.9 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 45.1% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 42 | 364 | 31 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3094 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3094 | | 781 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 47 | 404 | 34 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 47 | 428 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1809 | | 457 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.14 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.07 | 0.24 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.5 | | 5.7 | 5.8 | |
| Progression Factor | 0.72 | 0.72 | | 0.75 | 0.74 | | 0.94 | 0.97 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.8 | 13.3 | | 12.6 | 13.4 | | 5.7 | 6.6 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.3 | | | 13.4 | | | 6.5 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 40.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 14 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1808 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1838 | | | 1739 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 16 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 209 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 829 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.01 | 0.92 | | 0.88 | 0.88 | | | 1.04 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.0 | 11.9 | | 10.7 | 11.1 | | | 15.6 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.1 | | | 11.1 | | | 15.6 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 86 | 121 | 58 | 2 | 80 | 34 | 21 | 272 | 9 | 7 | 175 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1878 | | 1587 | 1870 | | | 1971 | | | 1932 | |
| Flt Permitted | 0.68 | 1.00 | | 0.58 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1141 | 1878 | | 975 | 1870 | | | 1929 | | | 1915 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 134 | 64 | 2 | 89 | 38 | 23 | 302 | 10 | 8 | 194 | 31 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 96 | 198 | 0 | 2 | 127 | 0 | 0 | 335 | 0 | 0 | 233 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 351 | 578 | | 300 | 575 | | | 1098 | | | 1090 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.00 | | | | c0.17 | | | 0.12 | |
| v/c Ratio | 0.27 | 0.34 | | 0.01 | 0.22 | | | 0.31 | | | 0.21 | |
| Uniform Delay, d1 | 17.0 | 17.4 | | 15.6 | 16.7 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.90 | 0.89 | | 0.89 | 0.92 | | | 0.94 | | | 1.00 | |
| Incremental Delay, d2 | 1.9 | 1.6 | | 0.0 | 0.9 | | | 0.7 | | | 0.4 | |
| Delay (s) | 17.1 | 17.0 | | 13.9 | 16.3 | | | 7.6 | | | 7.3 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.1 | | | 16.2 | | | 7.6 | | | 7.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 116 | 9 | 52 | 1 | 3 | 12 | 38 | 467 | 6 | 2 | 191 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1673 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.63 | 1.00 | 1.00 | 0.39 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1673 | | 1283 | 1422 | | 981 | 1631 | 1392 | 682 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 129 | 10 | 58 | 1 | 3 | 13 | 42 | 519 | 7 | 2 | 212 | 53 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 129 | 26 | 0 | 1 | 7 | 0 | 42 | 519 | 4 | 2 | 212 | 32 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 355 | 394 | | 589 | 979 | 835 | 409 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.32 | | | 0.11 | |
| v/s Ratio Perm | c0.10 | | | 0.00 | | | 0.04 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.37 | 0.06 | | 0.00 | 0.02 | | 0.07 | 0.53 | 0.01 | 0.00 | 0.19 | 0.04 |
| Uniform Delay, d1 | 18.9 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.6 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.39 | | 1.00 | 1.00 | | 1.13 | 1.06 | 1.30 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.9 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.6 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 30.8 | 41.5 | | 17.0 | 17.1 | | 6.3 | 9.7 | 6.8 | 5.2 | 6.2 | 5.4 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 34.5 | | | 17.1 | | | 9.4 | | | 6.0 | |
| Approach LOS | | C | | | B | | | A | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 13.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.48 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 52.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|------|----------------------|------|------|------|--------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 249 | 76 | 125 | 364 | 0 | 0 | 0 | 0 | 80 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2829 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.49 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2829 | | 835 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 262 | 80 | 132 | 383 | 0 | 0 | 0 | 0 | 84 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 313 | 0 | 132 | 383 | 0 | 0 | 0 | 0 | 84 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | 648 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | c0.05 | 0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.34 | | 0.20 | 0.20 | | | | | 0.17 | 0.52 | |
| Uniform Delay, d1 | | 25.2 | | 10.6 | 9.5 | | | | | 24.4 | 27.8 | |
| Progression Factor | | 1.00 | | 1.96 | 2.05 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.2 | | 21.4 | 19.7 | | | | | 25.1 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.2 | | | 20.2 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 61.9% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | |  |  |  | | | |
| Volume (vph) | 129 | 200 | 0 | 0 | 318 | 67 | 171 | 544 | 341 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.35 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 618 | 3054 | | | 2832 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 211 | 0 | 0 | 335 | 71 | 180 | 573 | 359 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 241 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 211 | 0 | 0 | 388 | 0 | 180 | 573 | 118 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 682 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.10 | c0.32 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.08 | | | |
| v/c Ratio | 0.20 | 0.12 | | | 0.65 | | 0.31 | 0.97 | 0.24 | | | |
| Uniform Delay, d1 | 11.8 | 9.5 | | | 36.2 | | 25.0 | 33.1 | 24.3 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.75 | 0.79 | 1.90 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 5.5 | | 0.9 | 24.5 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 41.6 | | 19.8 | 50.5 | 47.0 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 41.6 | | | 44.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 36.1 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.60 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | | | |
| Intersection Capacity Utilization | 61.9% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013






















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 469 | 362 | 34 | 587 | 0 | 0 | 0 | 0 | 5 | 216 | 200 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3114 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3114 | | 283 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 489 | 377 | 35 | 611 | 0 | 0 | 0 | 0 | 5 | 225 | 208 |
| RTOR Reduction (vph) | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137 |
| Lane Group Flow (vph) | 0 | 726 | 0 | 35 | 611 | 0 | 0 | 0 | 0 | 5 | 225 | 71 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1121 | | 392 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.23 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.65 | | 0.09 | 0.32 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.7 | | 12.5 | 10.8 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.55 | 0.68 | | | | | 0.74 | 0.79 | 0.92 |
| Incremental Delay, d2 | | 2.9 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.6 |
| Delay (s) | | 29.6 | | 7.0 | 7.5 | | | | | 16.1 | 18.8 | 21.6 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 29.6 | | | 7.5 | | | 0.0 | | | 20.1 | |
| Approach LOS | | C | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue

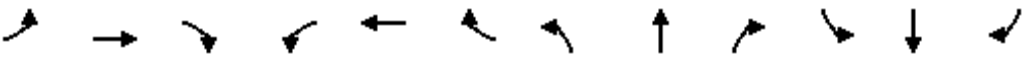
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | |  |   |  | | | |
| Volume (vph) | 414 | 59 | 0 | 0 | 57 | 6 | 564 | 637 | 61 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3040 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1083 | 2333 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 427 | 61 | 0 | 0 | 59 | 6 | 581 | 657 | 63 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 213 | 275 | 0 | 0 | 60 | 0 | 581 | 657 | 25 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1444 | | | 461 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.37 | c0.40 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.31 | 0.19 | | | 0.13 | | 1.01 | 1.08 | 0.05 | | | |
| Uniform Delay, d1 | 14.1 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.23 | 0.24 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.9 | 0.2 | | | 0.6 | | 40.1 | 61.5 | 0.2 | | | |
| Delay (s) | 4.1 | 3.4 | | | 37.4 | | 71.6 | 93.0 | 20.3 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.7 | | | 37.4 | | | 79.9 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.4 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 88.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 155 | 272 | 69 | 55 | 272 | 108 | 49 | 1100 | 59 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2843 | | | 2817 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.63 | | | 0.83 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1827 | | | 2354 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 161 | 283 | 72 | 57 | 283 | 112 | 51 | 1146 | 61 | 92 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 38 | 0 | 0 | 0 | 24 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 501 | 0 | 0 | 414 | 0 | 51 | 1146 | 37 | 92 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 846 | | | 775 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.37 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.21 | | | c0.18 | | 0.07 | | 0.03 | 0.24 | | 0.01 |
| v/c Ratio | | 0.59 | | | 0.53 | | 0.17 | 0.95 | 0.07 | 0.64 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 18.9 | | | 23.2 | | 14.8 | 24.9 | 16.4 | 18.5 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.31 | 0.85 | 1.40 | 1.82 | 1.64 | 3.16 |
| Incremental Delay, d2 | | 3.0 | | | 2.6 | | 0.8 | 11.0 | 0.2 | 18.1 | 1.0 | 0.1 |
| Delay (s) | | 21.9 | | | 25.8 | | 20.2 | 32.2 | 23.1 | 51.7 | 31.8 | 51.0 |
| Level of Service | | C | | | C | | C | C | C | D | C | D |
| Approach Delay (s) | | 21.9 | | | 25.8 | | | 31.3 | | | 36.0 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.8 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 80.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 42 | 400 | 0 | 0 | 405 | 77 | 30 | 60 | 93 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1677 | | | 1584 | | | | |
| Flt Permitted | | 0.92 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1583 | | | 1677 | | | 1584 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 47 | 444 | 0 | 0 | 450 | 86 | 33 | 67 | 103 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 57 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 491 | 0 | 0 | 526 | 0 | 0 | 146 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 828 | | | 877 | | | 560 | | | | |
| v/s Ratio Prot | | | | | c0.31 | | | | | | | |
| v/s Ratio Perm | | 0.31 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.59 | | | 0.60 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 10.7 | | | 10.8 | | | 14.9 | | | | |
| Progression Factor | | 1.00 | | | 0.61 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.1 | | | 2.6 | | | 1.1 | | | | |
| Delay (s) | | 13.8 | | | 9.1 | | | 16.1 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 13.8 | | | 9.1 | | | 16.1 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 46 | 395 | 31 | 19 | 399 | 47 | 24 | 167 | 33 | 50 | 105 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1887 | | | 1842 | | | 3185 | | | 3125 | |
| Flt Permitted | | 0.93 | | | 0.97 | | | 0.92 | | | 0.83 | |
| Satd. Flow (perm) | | 1754 | | | 1797 | | | 2933 | | | 2640 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 439 | 34 | 21 | 443 | 52 | 27 | 186 | 37 | 56 | 117 | 31 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 0 | 520 | 0 | 0 | 510 | 0 | 0 | 228 | 0 | 0 | 186 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 810 | | | 829 | | | 1218 | | | 1097 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.28 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.64 | | | 0.61 | | | 0.19 | | | 0.17 | |
| Uniform Delay, d1 | | 13.4 | | | 13.2 | | | 12.0 | | | 11.9 | |
| Progression Factor | | 0.62 | | | 0.53 | | | 0.97 | | | 0.63 | |
| Incremental Delay, d2 | | 3.3 | | | 3.3 | | | 0.3 | | | 0.3 | |
| Delay (s) | | 11.6 | | | 10.2 | | | 12.1 | | | 7.8 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 11.6 | | | 10.2 | | | 12.1 | | | 7.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 80.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 50 | 265 | 21 | 28 | 338 | 61 | 53 | 303 | 85 | 46 | 91 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2936 | | 1583 | 2944 | | 1497 | 3034 | | 1594 | 2896 | |
| Flt Permitted | 0.44 | 1.00 | | 0.55 | 1.00 | | 0.67 | 1.00 | | 0.50 | 1.00 | |
| Satd. Flow (perm) | 697 | 2936 | | 916 | 2944 | | 1053 | 3034 | | 833 | 2896 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 56 | 294 | 23 | 31 | 376 | 68 | 59 | 337 | 94 | 51 | 101 | 31 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 56 | 308 | 0 | 31 | 422 | 0 | 59 | 392 | 0 | 51 | 118 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 236 | 994 | | 310 | 996 | | 567 | 1634 | | 449 | 1559 | |
| v/s Ratio Prot | | 0.11 | | | c0.14 | | | c0.13 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.24 | 0.31 | | 0.10 | 0.42 | | 0.10 | 0.24 | | 0.11 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 15.9 | | 14.7 | 16.6 | | 7.3 | 7.9 | | 7.4 | 7.2 | |
| Progression Factor | 0.59 | 0.56 | | 0.77 | 0.79 | | 0.64 | 0.62 | | 1.33 | 1.37 | |
| Incremental Delay, d2 | 2.0 | 0.7 | | 0.6 | 1.3 | | 0.4 | 0.3 | | 0.5 | 0.1 | |
| Delay (s) | 11.0 | 9.6 | | 12.0 | 14.4 | | 5.0 | 5.3 | | 10.3 | 10.0 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.3 | | | 5.2 | | | 10.1 | |
| Approach LOS | | A | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.31 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 80 | 372 | 27 | 37 | 361 | 82 | 20 | 307 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1384 | 3013 | | 1334 | 3537 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.49 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 675 | 3013 | | 694 | 3537 | | | 3226 | | | 2809 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 84 | 392 | 28 | 39 | 380 | 86 | 21 | 323 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 30 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 84 | 412 | 0 | 39 | 436 | 0 | 0 | 374 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 322 | 1437 | | 331 | 1687 | | | 1290 | | | 1124 | |
| v/s Ratio Prot | c0.14 | | | 0.12 | | | | | | | | |
| v/s Ratio Perm | 0.12 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.26 | 0.29 | | 0.12 | 0.26 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.3 | | 9.4 | 10.1 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.61 | 1.65 | | 0.79 | 0.77 | | | 0.51 | | | 0.64 | |
| Incremental Delay, d2 | 1.9 | 0.5 | | 0.6 | 0.3 | | | 0.6 | | | 0.3 | |
| Delay (s) | 18.3 | 17.5 | | 8.0 | 8.1 | | | 7.3 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | 17.6 | | | 8.1 | | | 7.3 | | | 8.3 | | |
| Approach LOS | B | | | A | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 10.9 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.29 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.7% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 94 | 286 | 95 | 104 | 347 | 104 | 84 | 80 | 84 | 84 | 80 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3031 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.75 | 1.00 | | 0.77 | | | 0.80 | | | 0.79 | |
| Satd. Flow (perm) | | 1238 | 1409 | | 2361 | | | 1480 | | | 1469 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 104 | 318 | 106 | 116 | 386 | 116 | 93 | 89 | 93 | 93 | 89 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 51 | 0 | 31 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 422 | 55 | 0 | 587 | 0 | 0 | 247 | 0 | 0 | 243 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 648 | 737 | | 1235 | | | 478 | | | 475 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.34 | 0.04 | | 0.25 | | | c0.17 | | | 0.17 | |
| v/c Ratio | | 0.65 | 0.08 | | 0.48 | | | 0.52 | | | 0.51 | |
| Uniform Delay, d1 | | 11.2 | 7.7 | | 9.8 | | | 17.9 | | | 17.8 | |
| Progression Factor | | 2.03 | 5.63 | | 0.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 4.9 | 0.2 | | 1.2 | | | 3.9 | | | 3.9 | |
| Delay (s) | | 27.7 | 43.5 | | 5.3 | | | 21.8 | | | 21.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 30.9 | | | 5.3 | | | 21.8 | | | 21.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 69.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 70 | 363 | 20 | 15 | 433 | 63 | 37 | 103 | 41 | 41 | 86 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1572 | 3001 | | | 3454 | | | 3404 | |
| Flt Permitted | 0.40 | 1.00 | | 0.48 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 616 | 3018 | | 797 | 3001 | | | 3037 | | | 3020 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 78 | 403 | 22 | 17 | 481 | 70 | 41 | 114 | 46 | 46 | 96 | 104 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 25 | 0 | 0 | 58 | 0 |
| Lane Group Flow (vph) | 78 | 419 | 0 | 17 | 533 | 0 | 0 | 176 | 0 | 0 | 188 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 265 | 1300 | | 343 | 1293 | | | 1355 | | | 1347 | |
| v/s Ratio Prot | | 0.14 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.06 | | | c0.06 | |
| v/c Ratio | 0.29 | 0.32 | | 0.05 | 0.41 | | | 0.13 | | | 0.14 | |
| Uniform Delay, d1 | 12.1 | 12.2 | | 10.8 | 12.8 | | | 10.6 | | | 10.6 | |
| Progression Factor | 0.99 | 1.02 | | 1.12 | 0.93 | | | 0.99 | | | 0.81 | |
| Incremental Delay, d2 | 2.2 | 0.5 | | 0.2 | 0.6 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.2 | 12.9 | | 12.2 | 12.5 | | | 10.7 | | | 8.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.1 | | | 12.4 | | | 10.7 | | | 8.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 82 | 431 | 69 | 89 | 432 | 270 | 46 | 315 | 87 | 211 | 151 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3073 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.66 | | | 0.76 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2109 | | | 2348 | | | 2784 | | | 2030 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 91 | 479 | 77 | 99 | 480 | 300 | 51 | 350 | 97 | 234 | 168 | 56 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 102 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 631 | 0 | 0 | 777 | 0 | 0 | 465 | 0 | 0 | 441 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 844 | | | 939 | | | 1276 | | | 625 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.30 | | | c0.33 | | | 0.13 | | | c0.22 | |
| v/c Ratio | | 0.75 | | | 0.83 | | | 0.36 | | | 0.88dl | |
| Uniform Delay, d1 | | 16.7 | | | 17.5 | | | 11.9 | | | 19.9 | |
| Progression Factor | | 1.75 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 5.9 | | | 8.3 | | | 0.8 | | | 6.6 | |
| Delay (s) | | 35.2 | | | 25.8 | | | 12.7 | | | 24.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 35.2 | | | 25.8 | | | 12.7 | | | 24.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 25.3 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.76 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 84.6% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 686 | 112 | 43 | 717 | 0 | 127 | 0 | 66 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2567 | | | 1310 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 762 | 124 | 48 | 797 | 0 | 141 | 0 | 73 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 868 | 0 | 0 | 845 | 0 | 0 | 193 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 941 | | | 233 | | | | | |
| v/s Ratio Prot | c0.29 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.33 | | | c0.15 | | | | | |
| v/c Ratio | 0.45 | | | 0.90 | | | 0.83 | | | | | |
| Uniform Delay, d1 | 8.0 | | | 26.9 | | | 35.7 | | | | | |
| Progression Factor | 0.00 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 11.8 | | | 27.7 | | | | | |
| Delay (s) | 0.5 | | | 54.1 | | | 63.4 | | | | | |
| Level of Service | A | | | D | | | E | | | | | |
| Approach Delay (s) | 0.5 | | | 54.1 | | | 63.4 | | | 0.0 | | |
| Approach LOS | A | | | D | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 30.7 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.76 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 70.2% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 117 | 476 | 177 | 260 | 613 | 174 | 96 | 19 | 176 | 74 | 7 | 71 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1755 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.33 | 1.00 | | 0.23 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 532 | 3020 | | 402 | 3257 | 1457 | | 1582 | | 692 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 130 | 529 | 197 | 289 | 681 | 193 | 107 | 21 | 196 | 82 | 8 | 79 |
| RTOR Reduction (vph) | 0 | 40 | 0 | 0 | 0 | 97 | 0 | 75 | 0 | 0 | 0 | 43 |
| Lane Group Flow (vph) | 130 | 686 | 0 | 289 | 681 | 96 | 0 | 249 | 0 | 82 | 8 | 36 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | | pm+ov | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 42.0 | 32.7 | | 48.4 | 36.1 | 44.7 | | 20.0 | | 31.6 | 31.6 | 40.9 |
| Effective Green, g (s) | 42.0 | 32.7 | | 48.4 | 36.1 | 44.7 | | 20.0 | | 31.6 | 31.6 | 40.9 |
| Actuated g/C Ratio | 0.47 | 0.36 | | 0.54 | 0.40 | 0.50 | | 0.22 | | 0.35 | 0.35 | 0.45 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 350 | 1097 | | 389 | 1306 | 724 | | 352 | | 333 | 602 | 662 |
| v/s Ratio Prot | 0.04 | 0.23 | | c0.10 | 0.21 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.13 | | | c0.29 | | 0.05 | | c0.16 | | 0.06 | | 0.02 |
| v/c Ratio | 0.37 | 0.63 | | 0.74 | 0.52 | 0.13 | | 0.71 | | 0.25 | 0.01 | 0.05 |
| Uniform Delay, d1 | 14.2 | 23.6 | | 13.5 | 20.4 | 12.2 | | 32.3 | | 21.5 | 19.0 | 13.7 |
| Progression Factor | 1.92 | 1.62 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.8 | 2.5 | | 8.0 | 1.5 | 0.1 | | 6.8 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 28.0 | 40.7 | | 21.5 | 21.9 | 12.3 | | 39.1 | | 21.9 | 19.0 | 13.8 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | 38.8 | | | 20.2 | | | 39.1 | | | 18.0 | | |
| Approach LOS | D | | | C | | | D | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.8 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 71.5% | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 492 | 234 | 6 | 504 | 0 | 0 | 0 | 0 | 30 | 0 | 543 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 547 | 260 | 7 | 560 | 0 | 0 | 0 | 0 | 33 | 0 | 603 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 560 | | | 547 | | | 840 | 1120 | 273 | 847 | 1120 | 280 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 560 | | | 547 | | | 840 | 1120 | 273 | 847 | 1120 | 280 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 87 | 100 | 15 |
| cM capacity (veh/h) | 987 | | | 998 | | | 37 | 199 | 715 | 249 | 199 | 708 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 273 | 273 | 260 | 193 | 373 | 33 | 603 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 33 | 0 | | | | | |
| Volume Right | 0 | 0 | 260 | 0 | 0 | 0 | 603 | | | | | |
| cSH | 1700 | 1700 | 1700 | 998 | 1700 | 249 | 708 | | | | | |
| Volume to Capacity | 0.16 | 0.16 | 0.15 | 0.01 | 0.22 | 0.13 | 0.85 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 11 | 246 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 21.7 | 32.1 | | | | | |
| Lane LOS | | | | A | | C | D | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 31.5 | | | | | | |
| Approach LOS | | | | | | D | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | 10.0 | | | | | | | | | | | |
| Intersection Capacity Utilization | 57.0% | | | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 522 | 0 | 510 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 580 | 0 | 567 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 290 | 290 | 567 | | | |
| Volume Left (vph) | 290 | 290 | 567 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 5.7 | | | |
| Degree Utilization, x | 0.55 | 0.55 | 0.90 | | | |
| Capacity (veh/h) | 514 | 505 | 627 | | | |
| Control Delay (s) | 16.7 | 16.7 | 38.6 | | | |
| Approach Delay (s) | 16.7 | | 38.6 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 27.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 52.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | | |  | |
| Volume (vph) | 0 | 340 | 131 | 126 | 344 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3017 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.39 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3017 | | 645 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 378 | 146 | 140 | 382 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 476 | 0 | 140 | 382 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1278 | | 481 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.16 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.37 | | 0.29 | 0.21 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.8 | | 12.6 | 8.7 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.37 | 0.33 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | 1.4 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.6 | | 6.2 | 3.1 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.6 | | | 3.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | HCM Level of Service | | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 36.6% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 68 | 344 | 0 | 0 | 400 | 76 | 70 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4425 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 656 | 3257 | | | 3073 | | | 4425 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 382 | 0 | 0 | 444 | 84 | 78 | 72 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 382 | 0 | 0 | 510 | 0 | 0 | 165 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 485 | 1839 | | | 1265 | | | 1406 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.21 | | | 0.40 | | | 0.12 | | | | |
| Uniform Delay, d1 | 12.1 | 9.1 | | | 17.6 | | | 20.6 | | | | |
| Progression Factor | 0.41 | 0.42 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 5.7 | 4.1 | | | 18.6 | | | 20.7 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 4.3 | | | 18.6 | | | 20.7 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 82 | 31 | 243 | 31 | 129 | 85 | 52 | 55 | 90 | 124 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2939 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.88 | | | 0.74 | | | 0.89 | |
| Satd. Flow (perm) | | 2639 | | | 2628 | | | 1351 | | | 1567 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 341 | 91 | 34 | 270 | 34 | 143 | 94 | 58 | 61 | 100 | 138 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 443 | 0 | 0 | 325 | 0 | 0 | 281 | 0 | 0 | 251 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | | 930 | | | 665 | | | 771 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | | | 0.12 | | | c0.21 | | | 0.16 | |
| v/c Ratio | | 0.47 | | | 0.35 | | | 0.42 | | | 0.33 | |
| Uniform Delay, d1 | | 16.3 | | | 15.5 | | | 10.6 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.7 | | | 1.0 | | | 2.0 | | | 1.1 | |
| Delay (s) | | 18.0 | | | 16.5 | | | 12.5 | | | 11.1 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.0 | | | 16.5 | | | 12.5 | | | 11.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.0 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.44 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 66.9% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 202 | 82 | 205 | 176 | 62 | 78 | 974 | 106 | 73 | 459 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 2954 | | 1593 | 3512 | | 1487 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.54 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 2954 | | 901 | 3512 | | 640 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 86 | 216 | 185 | 65 | 82 | 1025 | 112 | 77 | 483 | 82 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 0 | 41 | 0 | 0 | 0 | 69 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 178 | 247 | 0 | 216 | 209 | 0 | 82 | 1025 | 43 | 77 | 483 | 32 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | | 1 | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 973 | | 351 | 1157 | | 311 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.06 | | 0.01 | c0.34 | | c0.03 | 0.16 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.10 | | 0.03 | 0.20 | | 0.03 |
| v/c Ratio | 0.49 | 0.25 | | 0.62 | 0.18 | | 0.26 | 0.87 | 0.08 | 0.53 | 0.41 | 0.06 |
| Uniform Delay, d1 | 20.6 | 20.9 | | 22.0 | 20.3 | | 15.1 | 24.0 | 16.4 | 17.2 | 18.9 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.97 | 0.61 | 0.80 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 7.8 | 0.3 | | 2.1 | 8.8 | 0.3 | 12.3 | 1.0 | 0.2 |
| Delay (s) | 25.2 | 21.5 | | 29.8 | 20.7 | | 17.1 | 32.8 | 16.7 | 46.3 | 12.4 | 13.3 |
| Level of Service | C | C | | C | C | | B | C | B | D | B | B |
| Approach Delay (s) | | 22.9 | | | 24.9 | | | 30.3 | | | 16.6 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.0 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 71.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

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|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 49 | 284 | 18 | 14 | 328 | 8 | 35 | 113 | 25 | 20 | 56 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1928 | 1382 | | 1954 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.91 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1768 | 1382 | | 1924 | 1331 | | 1860 | 1452 | | 1810 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 299 | 19 | 15 | 345 | 8 | 37 | 119 | 26 | 21 | 59 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 0 | 351 | 9 | 0 | 360 | 4 | 0 | 156 | 11 | 0 | 80 | 37 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 816 | 638 | | 888 | 614 | | 773 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.19 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.03 |
| v/c Ratio | | 0.43 | 0.01 | | 0.41 | 0.01 | | 0.20 | 0.02 | | 0.11 | 0.06 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 11.6 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.46 | 0.44 | | 1.33 | 1.73 | | 0.95 | 0.90 |
| Incremental Delay, d2 | | 1.7 | 0.0 | | 1.3 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.2 |
| Delay (s) | | 13.4 | 9.5 | | 6.7 | 4.2 | | 16.7 | 19.4 | | 11.3 | 10.5 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.2 | | | 6.7 | | | 17.1 | | | 10.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 62.7% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 258 | 10 | 15 | 278 | 30 | 12 | 234 | 25 | 30 | 70 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3023 | | 1520 | 2996 | | 1520 | 2996 | | 1520 | 2823 | |
| Flt Permitted | 0.95 | 1.00 | | 0.57 | 1.00 | | 0.66 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3023 | | 912 | 2996 | | 1052 | 2996 | | 904 | 2823 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 287 | 11 | 17 | 309 | 33 | 13 | 260 | 28 | 33 | 78 | 71 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 294 | 0 | 17 | 329 | 0 | 13 | 276 | 0 | 33 | 107 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1488 | | 309 | 1014 | | 437 | 1244 | | 376 | 1173 | |
| v/s Ratio Prot | c0.05 | 0.10 | | | c0.11 | | | c0.09 | | | 0.04 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.04 | | |
| v/c Ratio | 0.51 | 0.20 | | 0.06 | 0.32 | | 0.03 | 0.22 | | 0.09 | 0.09 | |
| Uniform Delay, d1 | 27.4 | 9.3 | | 14.5 | 16.0 | | 11.2 | 12.2 | | 11.5 | 11.5 | |
| Progression Factor | 0.90 | 0.37 | | 0.81 | 0.74 | | 0.63 | 0.66 | | 1.10 | 1.22 | |
| Incremental Delay, d2 | 10.3 | 0.3 | | 0.3 | 0.8 | | 0.1 | 0.4 | | 0.5 | 0.2 | |
| Delay (s) | 34.9 | 3.7 | | 12.1 | 12.7 | | 7.2 | 8.5 | | 13.2 | 14.2 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.5 | | | 12.6 | | | 8.4 | | | 14.0 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 37.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 41 | 264 | 16 | 95 | 273 | 42 | 26 | 284 | 20 | 24 | 137 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.99 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3014 | | 1520 | 2979 | | | 3215 | | | 3138 | |
| Flt Permitted | 0.54 | 1.00 | | 0.95 | 1.00 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | 867 | 3014 | | 1520 | 2979 | | | 2977 | | | 2824 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 293 | 18 | 106 | 303 | 47 | 29 | 316 | 22 | 27 | 152 | 46 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 19 | 0 | 0 | 7 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 46 | 304 | 0 | 106 | 331 | 0 | 0 | 360 | 0 | 0 | 197 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 267 | 927 | | 140 | 1329 | | | 1145 | | | 1086 | |
| v/s Ratio Prot | c0.10 | | | c0.07 | | | 0.11 | | | | | |
| v/s Ratio Perm | 0.05 | | | | | | c0.12 | | | 0.07 | | |
| v/c Ratio | 0.17 | 0.33 | | 0.76 | 0.25 | | | 0.31 | | | 0.18 | |
| Uniform Delay, d1 | 16.4 | 17.3 | | 28.8 | 11.2 | | | 14.0 | | | 13.2 | |
| Progression Factor | 0.59 | 0.58 | | 1.32 | 1.01 | | | 0.71 | | | 0.75 | |
| Incremental Delay, d2 | 1.4 | 0.9 | | 26.3 | 0.4 | | | 0.7 | | | 0.4 | |
| Delay (s) | 11.0 | 10.9 | | 64.2 | 11.7 | | | 10.6 | | | 10.3 | |
| Level of Service | B | B | | E | B | | | B | | | B | |
| Approach Delay (s) | 10.9 | | | 23.9 | | | 10.6 | | | 10.3 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.0 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 43.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 273 | 16 | 69 | 377 | 69 | 34 | 93 | 160 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1560 | | | 3165 | | | | |
| Flt Permitted | | 0.97 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1545 | | | 1437 | | | 3165 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 16 | 303 | 18 | 77 | 419 | 77 | 38 | 103 | 178 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 335 | 0 | 0 | 566 | 0 | 0 | 182 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 996 | | | 926 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.39 | | | 0.06 | | | | |
| v/c Ratio | | 0.34 | | | 0.61 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.2 | | | 6.8 | | | 20.3 | | | | |
| Progression Factor | | 2.07 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 3.0 | | | 0.8 | | | | |
| Delay (s) | | 11.7 | | | 9.8 | | | 21.1 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 11.7 | | | 9.8 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 65.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 84 | 349 | 422 | 44 | 64 | 90 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 88 | 367 | 444 | 46 | 67 | 95 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.86 | | | | 0.86 | 0.86 |
| vC, conflicting volume | 512 | | | | 1038 | 491 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 351 | | | | 962 | 327 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 91 | | | | 69 | 84 |
| cM capacity (veh/h) | 979 | | | | 218 | 603 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 456 | 491 | 67 | 95 | | |
| Volume Left | 88 | 0 | 67 | 0 | | |
| Volume Right | 0 | 46 | 0 | 95 | | |
| cSH | 979 | 1700 | 218 | 603 | | |
| Volume to Capacity | 0.09 | 0.29 | 0.31 | 0.16 | | |
| Queue Length 95th (ft) | 7 | 0 | 32 | 14 | | |
| Control Delay (s) | 2.6 | 0.0 | 28.8 | 12.1 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.6 | 0.0 | 19.0 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.8 | | | |
| Intersection Capacity Utilization | | | 65.4% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 464 | 1 | 26 | 658 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1663 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 516 | 1 | 29 | 731 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 517 | 0 | 0 | 760 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 607 | | |
| v/s Ratio Prot | c0.30 | | | | | |
| v/s Ratio Perm | | | | c0.46 | | |
| v/c Ratio | 0.43 | | | 1.25 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.05 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 126.6 | | |
| Delay (s) | 0.4 | | | 153.6 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.4 | | | 153.6 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 91.6 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 0.85 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 62.1% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 184 | 191 | 25 | 551 | 0 | 0 | 0 | 0 | 3 | 0 | 250 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 204 | 212 | 28 | 612 | 0 | 0 | 0 | 0 | 3 | 0 | 278 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 612 | | | 204 | | | 978 | 978 | 208 | 770 | 872 | 612 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 612 | | | 204 | | | 978 | 978 | 208 | 770 | 872 | 612 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 36 |
| cM capacity (veh/h) | 977 | | | 985 | | | 72 | 245 | 804 | 287 | 283 | 431 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 136 | 280 | 640 | 3 | 278 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 212 | 0 | 0 | 278 | | | | | | | |
| cSH | 1700 | 1700 | 985 | 287 | 431 | | | | | | | |
| Volume to Capacity | 0.08 | 0.16 | 0.03 | 0.01 | 0.64 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 110 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.7 | 27.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 27.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.2% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 187 | 0 | 576 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 208 | 0 | 640 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 640 | | | |
| Volume Left (vph) | 104 | 104 | 640 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.8 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.86 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.2 | 10.2 | 30.0 | | | |
| Approach Delay (s) | 10.2 | | 30.0 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 25.1 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.0% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|----------|----------|----------------------|------|------|------|-------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 646 | 207 | 169 | 511 | 0 | 0 | 0 | 0 | 207 | 115 | 294 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3705 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3705 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 680 | 218 | 178 | 538 | 0 | 0 | 0 | 0 | 218 | 121 | 309 |
| RTOR Reduction (vph) | 0 | 0 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 90 |
| Lane Group Flow (vph) | 0 | 680 | 112 | 0 | 716 | 0 | 0 | 0 | 0 | 120 | 292 | 64 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.2 | 39.2 | | 68.3 | | | | | 21.8 | 21.8 | 67.0 |
| Effective Green, g (s) | | 39.2 | 39.2 | | 68.3 | | | | | 21.8 | 21.8 | 67.0 |
| Actuated g/C Ratio | | 0.25 | 0.25 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 730 | 294 | | 1439 | | | | | 183 | 505 | 470 |
| v/s Ratio Prot | | c0.23 | | | c0.21 | | | | | c0.09 | 0.08 | |
| v/s Ratio Perm | | | 0.09 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.93 | 0.38 | | 0.50 | | | | | 0.66 | 0.58 | 0.14 |
| Uniform Delay, d1 | | 59.1 | 50.3 | | 33.4 | | | | | 65.5 | 64.8 | 28.7 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 20.2 | 3.7 | | 0.1 | | | | | 8.2 | 1.6 | 0.1 |
| Delay (s) | | 79.3 | 54.0 | | 0.7 | | | | | 73.7 | 66.4 | 28.8 |
| Level of Service | | E | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 73.2 | | | 0.7 | | | 0.0 | | | 58.8 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 46.1 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.7 | | |
| Intersection Capacity Utilization | | | 60.8% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 210 | 643 | 0 | 0 | 452 | 112 | 228 | 144 | 189 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.92 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2961 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2961 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 233 | 714 | 0 | 0 | 502 | 124 | 253 | 160 | 210 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 88 | 0 | 118 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 233 | 714 | 0 | 0 | 502 | 36 | 215 | 290 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 83.7 | 83.7 | | | 33.6 | 33.6 | 15.8 | 15.8 | | | | |
| Effective Green, g (s) | 83.7 | 83.7 | | | 33.6 | 33.6 | 15.8 | 15.8 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.21 | 0.21 | 0.10 | 0.10 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 823 | 1761 | | | 661 | 306 | 151 | 292 | | | | |
| v/s Ratio Prot | 0.15 | c0.21 | | | c0.16 | | c0.14 | 0.10 | | | | |
| v/s Ratio Perm | | | | | | 0.02 | | | | | | |
| v/c Ratio | 0.28 | 0.41 | | | 0.76 | 0.12 | 1.42 | 0.99 | | | | |
| Uniform Delay, d1 | 21.4 | 23.1 | | | 59.4 | 51.2 | 72.1 | 72.0 | | | | |
| Progression Factor | 0.07 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 5.0 | 0.2 | 224.7 | 50.5 | | | | |
| Delay (s) | 1.5 | 1.5 | | | 64.4 | 51.4 | 296.8 | 122.5 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.5 | | | 61.8 | | | 182.7 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 70.1 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 28.9 | | | |
| Intersection Capacity Utilization | | | 52.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 214 | 318 | 73 | 35 | 355 | 45 | 86 | 803 | 60 | 56 | 727 | 99 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1546 | 1556 | 1328 | 1595 | 1760 | | 1532 | 2990 | | 1508 | 2921 | |
| Flt Permitted | 0.23 | 1.00 | 1.00 | 0.43 | 1.00 | | 0.18 | 1.00 | | 0.16 | 1.00 | |
| Satd. Flow (perm) | 376 | 1556 | 1328 | 722 | 1760 | | 288 | 2990 | | 255 | 2921 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 225 | 335 | 77 | 37 | 374 | 47 | 91 | 845 | 63 | 59 | 765 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 225 | 335 | 27 | 37 | 416 | 0 | 91 | 902 | 0 | 59 | 857 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 229 | 557 | 461 | 274 | 554 | | 183 | 1134 | | 169 | 1108 | |
| v/s Ratio Prot | c0.07 | 0.22 | | 0.00 | 0.24 | | c0.02 | c0.30 | | 0.02 | 0.29 | |
| v/s Ratio Perm | c0.33 | | 0.02 | 0.04 | | | 0.18 | | | 0.13 | | |
| v/c Ratio | 0.98 | 0.60 | 0.06 | 0.14 | 0.75 | | 0.50 | 0.80 | | 0.35 | 0.77 | |
| Uniform Delay, d1 | 25.9 | 23.6 | 19.6 | 20.4 | 27.6 | | 17.7 | 24.8 | | 17.5 | 24.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 54.2 | 4.8 | 0.2 | 0.2 | 9.1 | | 2.1 | 5.8 | | 1.3 | 5.3 | |
| Delay (s) | 80.1 | 28.4 | 19.8 | 20.6 | 36.7 | | 19.8 | 30.6 | | 18.7 | 29.8 | |
| Level of Service | F | C | B | C | D | | B | C | | B | C | |
| Approach Delay (s) | | 45.6 | | | 35.4 | | | 29.6 | | | 29.1 | |
| Approach LOS | | D | | | D | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.7 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 81.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 53 | 295 | 26 | 5 | 311 | 19 | 78 | 79 | 16 | 11 | 42 | 81 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | | | 0.92 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 1.00 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1903 | | | 1790 | |
| Flt Permitted | | 0.92 | 1.00 | | 1.00 | 1.00 | | 0.83 | | | 0.98 | |
| Satd. Flow (perm) | | 1762 | 1482 | | 1595 | 1198 | | 1625 | | | 1759 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 311 | 27 | 5 | 327 | 20 | 82 | 83 | 17 | 12 | 44 | 85 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 10 | 0 | 6 | 0 | 0 | 50 | 0 |
| Lane Group Flow (vph) | 0 | 367 | 13 | 0 | 332 | 10 | 0 | 176 | 0 | 0 | 91 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 867 | 730 | | 785 | 590 | | 675 | | | 731 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | 0.01 | | 0.21 | 0.01 | | c0.11 | | | 0.05 | |
| v/c Ratio | | 0.42 | 0.02 | | 0.42 | 0.02 | | 0.26 | | | 0.12 | |
| Uniform Delay, d1 | | 10.6 | 8.5 | | 10.6 | 8.4 | | 12.5 | | | 11.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.68 | 2.24 | | 1.00 | | | 1.48 | |
| Incremental Delay, d2 | | 1.5 | 0.0 | | 1.6 | 0.0 | | 0.9 | | | 0.4 | |
| Delay (s) | | 12.1 | 8.5 | | 19.3 | 18.9 | | 13.4 | | | 17.7 | |
| Level of Service | | B | A | | B | B | | B | | | B | |
| Approach Delay (s) | | 11.9 | | | 19.3 | | | 13.4 | | | 17.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 77.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 82 | 208 | 34 | 6 | 176 | 6 | 82 | 216 | 21 | 9 | 51 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.93 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1664 | 1392 | | 1608 | 1497 | | 1733 | 1390 | | 1569 | |
| Flt Permitted | | 0.86 | 1.00 | | 0.99 | 1.00 | | 0.88 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1443 | 1392 | | 1593 | 1497 | | 1551 | 1390 | | 1540 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 86 | 219 | 36 | 6 | 185 | 6 | 86 | 227 | 22 | 9 | 54 | 76 |
| RTOR Reduction (vph) | 0 | 0 | 23 | 0 | 0 | 4 | 0 | 0 | 11 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 0 | 305 | 13 | 0 | 191 | 2 | 0 | 313 | 11 | 0 | 100 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 511 | 493 | | 564 | 530 | | 764 | 684 | | 758 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | 0.01 | | 0.12 | 0.00 | | c0.20 | 0.01 | | 0.07 | |
| v/c Ratio | | 0.60 | 0.03 | | 0.34 | 0.00 | | 0.41 | 0.02 | | 0.13 | |
| Uniform Delay, d1 | | 17.2 | 13.7 | | 15.4 | 13.6 | | 10.5 | 8.4 | | 9.0 | |
| Progression Factor | | 1.92 | 3.40 | | 0.95 | 0.98 | | 0.27 | 0.18 | | 1.15 | |
| Incremental Delay, d2 | | 4.7 | 0.1 | | 1.6 | 0.0 | | 0.8 | 0.0 | | 0.4 | |
| Delay (s) | | 37.7 | 46.7 | | 16.2 | 13.3 | | 3.6 | 1.6 | | 10.6 | |
| Level of Service | | D | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 38.6 | | | 16.1 | | | 3.5 | | | 10.6 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 76.5% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 161 | 22 | 34 | 9 | 27 | 6 | 43 | 286 | 19 | 6 | 194 | 111 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.98 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1770 | 1390 | | 1835 | | | 1970 | | | 1873 | 1328 |
| Flt Permitted | | 0.79 | 1.00 | | 0.94 | | | 0.95 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1469 | 1390 | | 1751 | | | 1876 | | | 1858 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 179 | 24 | 38 | 10 | 30 | 7 | 48 | 318 | 21 | 7 | 216 | 123 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 62 |
| Lane Group Flow (vph) | 0 | 203 | 16 | 0 | 42 | 0 | 0 | 384 | 0 | 0 | 223 | 61 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 647 | 577 | | 458 | | | 924 | | | 915 | 654 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.09 | 0.01 | | 0.02 | | | c0.20 | | | 0.12 | 0.05 |
| v/c Ratio | | 0.31 | 0.03 | | 0.09 | | | 0.42 | | | 0.24 | 0.09 |
| Uniform Delay, d1 | | 12.8 | 11.2 | | 18.2 | | | 10.5 | | | 9.5 | 8.8 |
| Progression Factor | | 0.80 | 1.38 | | 1.00 | | | 0.45 | | | 0.53 | 0.31 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.4 | | | 1.2 | | | 0.6 | 0.3 |
| Delay (s) | | 11.3 | 15.6 | | 18.6 | | | 5.9 | | | 5.7 | 3.0 |
| Level of Service | | B | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 12.0 | | | 18.6 | | | 5.9 | | | 4.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.5 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 60.3% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↔ | ↑↑ | | | | | ↔ | ↑↑ | ↔ |
| Volume (vph) | 0 | 984 | 220 | 328 | 1128 | 0 | 0 | 0 | 0 | 274 | 200 | 374 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.13 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 210 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1036 | 232 | 345 | 1187 | 0 | 0 | 0 | 0 | 288 | 211 | 394 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | 61 |
| Lane Group Flow (vph) | 0 | 1236 | 0 | 345 | 1187 | 0 | 0 | 0 | 0 | 233 | 390 | 148 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 44.8 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Effective Green, g (s) | | 44.8 | | 69.4 | 69.4 | | | | | 23.6 | 23.6 | 23.6 |
| Actuated g/C Ratio | | 0.43 | | 0.66 | 0.66 | | | | | 0.22 | 0.22 | 0.22 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1844 | | 403 | 2132 | | | | | 319 | 609 | 305 |
| v/s Ratio Prot | | 0.29 | | c0.16 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.40 | | | | | | c0.16 | 0.14 | 0.11 |
| v/c Ratio | | 0.67 | | 0.86 | 0.56 | | | | | 0.73 | 0.64 | 0.48 |
| Uniform Delay, d1 | | 24.2 | | 23.9 | 9.5 | | | | | 37.7 | 36.9 | 35.4 |
| Progression Factor | | 1.00 | | 0.88 | 1.68 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.0 | | 9.0 | 0.5 | | | | | 8.6 | 2.3 | 1.4 |
| Delay (s) | | 26.1 | | 30.0 | 16.5 | | | | | 46.3 | 39.2 | 36.8 |
| Level of Service | | C | | C | B | | | | | D | D | D |
| Approach Delay (s) | | 26.1 | | | 19.6 | | | 0.0 | | | 40.5 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 108.2% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 309 | 949 | 0 | 0 | 934 | 234 | 521 | 346 | 661 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 4350 | | | 4336 | | | | |
| Flt Permitted | 0.13 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 407 | 3138 | | | 4350 | | | 4336 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 325 | 999 | 0 | 0 | 983 | 246 | 548 | 364 | 696 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 36 | 0 | 0 | 90 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 325 | 999 | 0 | 0 | 1193 | 0 | 0 | 1518 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | | 8 | | | | | |
| Actuated Green, G (s) | 63.6 | 63.6 | | | 45.5 | | | 29.4 | | | | |
| Effective Green, g (s) | 63.6 | 63.6 | | | 45.5 | | | 29.4 | | | | |
| Actuated g/C Ratio | 0.61 | 0.61 | | | 0.43 | | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 536 | 1901 | | | 1885 | | | 1214 | | | | |
| v/s Ratio Prot | 0.07 | c0.32 | | | 0.27 | | | | | | | |
| v/s Ratio Perm | c0.30 | | | | | | | 0.35 | | | | |
| v/c Ratio | 0.61 | 0.53 | | | 0.63 | | | 1.38dr | | | | |
| Uniform Delay, d1 | 12.9 | 12.0 | | | 23.2 | | | 37.8 | | | | |
| Progression Factor | 0.64 | 0.65 | | | 1.01 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.5 | 0.8 | | | 0.9 | | | 119.7 | | | | |
| Delay (s) | 9.7 | 8.6 | | | 24.3 | | | 157.5 | | | | |
| Level of Service | A | A | | | C | | | F | | | | |
| Approach Delay (s) | | 8.8 | | | 24.3 | | | 157.5 | | | 0.0 | |
| Approach LOS | | A | | | C | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 70.8 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 108.2% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 103 | 931 | 221 | 76 | 859 | 50 | 226 | 178 | 40 | 76 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1604 | 3231 | | 1445 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.29 | 1.00 | | 0.56 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 174 | 3061 | 1291 | 494 | 3231 | | 845 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 108 | 980 | 233 | 80 | 904 | 53 | 238 | 187 | 42 | 80 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 96 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 108 | 980 | 137 | 80 | 953 | 0 | 238 | 208 | 0 | 80 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.8 | 52.8 | 61.8 | 40.8 | 34.3 | | 28.7 | 19.7 | | 24.7 | 17.7 | |
| Effective Green, g (s) | 62.8 | 52.8 | 61.8 | 40.8 | 34.3 | | 28.7 | 19.7 | | 24.7 | 17.7 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.39 | 0.33 | | 0.27 | 0.19 | | 0.24 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 435 | 1539 | 760 | 261 | 1055 | | 282 | 564 | | 270 | 469 | |
| v/s Ratio Prot | 0.06 | c0.32 | 0.02 | c0.02 | c0.29 | | c0.07 | 0.07 | | 0.02 | 0.05 | |
| v/s Ratio Perm | 0.09 | | 0.09 | 0.10 | | | c0.16 | | | 0.05 | | |
| v/c Ratio | 0.25 | 0.64 | 0.18 | 0.31 | 0.90 | | 0.84 | 0.37 | | 0.30 | 0.28 | |
| Uniform Delay, d1 | 12.9 | 19.1 | 9.9 | 20.7 | 33.8 | | 34.6 | 37.2 | | 32.4 | 38.1 | |
| Progression Factor | 1.05 | 1.19 | 2.47 | 1.00 | 1.00 | | 0.95 | 0.90 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 1.1 | 0.1 | 0.7 | 12.4 | | 19.0 | 1.4 | | 0.6 | 1.2 | |
| Delay (s) | 14.2 | 23.8 | 24.6 | 21.3 | 46.2 | | 52.1 | 34.9 | | 33.0 | 39.3 | |
| Level of Service | B | C | C | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 23.2 | | | 44.3 | | | 43.7 | | | 37.6 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 75.4% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 59 | 323 | 273 | 79 | 209 | 98 | 328 | 380 | 161 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2920 | | 1463 | 3049 | | 1589 | 3173 | | 1549 | 3135 | |
| Flt Permitted | 0.53 | 1.00 | | 0.25 | 1.00 | | 0.46 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 905 | 2920 | | 381 | 3049 | | 772 | 3173 | | 714 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 340 | 287 | 83 | 220 | 103 | 345 | 400 | 169 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 139 | 0 | 0 | 51 | 0 | 0 | 44 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 62 | 488 | 0 | 83 | 272 | 0 | 345 | 525 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 354 | 790 | | 208 | 836 | | 530 | 1266 | | 321 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.03 | 0.09 | | c0.11 | 0.17 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.11 | | | c0.22 | | | 0.09 | | |
| v/c Ratio | 0.18 | 0.62 | | 0.40 | 0.33 | | 0.65 | 0.41 | | 0.30 | 0.33 | |
| Uniform Delay, d1 | 24.0 | 33.5 | | 24.6 | 30.4 | | 16.6 | 22.7 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.03 | 0.90 | |
| Incremental Delay, d2 | 0.3 | 3.6 | | 1.5 | 1.0 | | 3.0 | 1.0 | | 0.6 | 0.9 | |
| Delay (s) | 24.3 | 37.1 | | 26.1 | 31.4 | | 19.6 | 23.7 | | 23.6 | 26.8 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 36.0 | | | 30.3 | | | 22.2 | | | 26.1 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 72.5% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 165 | 392 | 610 | 6 | 401 | 108 | 198 | 592 | 7 | 80 | 368 | 100 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.92 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2584 | | | 2887 | | 1436 | 3186 | | 1451 | 2800 | |
| Flt Permitted | | 0.63 | | | 0.94 | | 0.38 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | | 1631 | | | 2703 | | 578 | 3186 | | 432 | 2800 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 183 | 436 | 678 | 7 | 446 | 120 | 220 | 658 | 8 | 89 | 409 | 111 |
| RTOR Reduction (vph) | 0 | 200 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 38 | 0 |
| Lane Group Flow (vph) | 0 | 1097 | 0 | 0 | 536 | 0 | 220 | 665 | 0 | 89 | 482 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 736 | | | 790 | | 284 | 1078 | | 236 | 948 | |
| v/s Ratio Prot | | c0.09 | | | | | c0.05 | 0.21 | | 0.02 | 0.17 | |
| v/s Ratio Perm | | c0.53 | | | 0.20 | | c0.26 | | | 0.13 | | |
| v/c Ratio | | 1.49 | | | 0.68 | | 0.77 | 0.62 | | 0.38 | 0.51 | |
| Uniform Delay, d1 | | 19.0 | | | 20.3 | | 16.0 | 18.0 | | 12.8 | 17.2 | |
| Progression Factor | | 1.00 | | | 1.51 | | 1.10 | 0.99 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 228.0 | | | 0.4 | | 14.4 | 2.0 | | 4.5 | 1.9 | |
| Delay (s) | | 247.0 | | | 31.2 | | 32.0 | 19.8 | | 17.4 | 19.1 | |
| Level of Service | | F | | | C | | C | B | | B | B | |
| Approach Delay (s) | | 247.0 | | | 31.2 | | | 22.8 | | | 18.9 | |
| Approach LOS | | F | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 109.9 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.12 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 92.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 49 | 111 | 341 | 856 | 127 | 13 | 110 | 780 | 274 | 10 | 949 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.89 | | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1665 | 1691 | | 1620 | 1938 | | 1659 | 3108 | | 1139 | 3233 | |
| Flt Permitted | 0.67 | 1.00 | | 0.30 | 1.00 | | 0.19 | 1.00 | | 0.17 | 1.00 | |
| Satd. Flow (perm) | 1166 | 1691 | | 517 | 1938 | | 340 | 3108 | | 205 | 3233 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 51 | 114 | 352 | 882 | 131 | 13 | 113 | 804 | 282 | 10 | 978 | 44 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 6 | 0 | 0 | 54 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 422 | 0 | 882 | 138 | 0 | 113 | 1032 | 0 | 10 | 1017 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 431 | 624 | | 191 | 716 | | 162 | 1482 | | 98 | 1542 | |
| v/s Ratio Prot | | 0.25 | | | 0.07 | | | 0.33 | | | 0.31 | |
| v/s Ratio Perm | 0.04 | | | c1.71 | | | c0.33 | | | 0.05 | | |
| v/c Ratio | 0.12 | 0.68 | | 4.62 | 0.19 | | 0.70 | 0.70 | | 0.10 | 0.66 | |
| Uniform Delay, d1 | 13.5 | 17.2 | | 20.5 | 13.9 | | 13.3 | 13.3 | | 9.3 | 13.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.74 | 1.94 | | 1.00 | 1.00 | | 0.99 | 0.97 | |
| Incremental Delay, d2 | 0.6 | 5.8 | | 1629.1 | 0.1 | | 22.1 | 2.7 | | 0.2 | 0.2 | |
| Delay (s) | 14.1 | 23.1 | | 1664.7 | 27.0 | | 35.4 | 16.0 | | 9.4 | 12.8 | |
| Level of Service | B | C | | F | C | | D | B | | A | B | |
| Approach Delay (s) | | 22.2 | | | 1434.9 | | | 17.9 | | | 12.8 | |
| Approach LOS | | C | | | F | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 402.3 | | | HCM Level of Service | | | F | | | | | |
| HCM Volume to Capacity ratio | 2.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 131.8% | | | ICU Level of Service | | | H | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|------------------------|--------|------|--------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 422 | 948 | 556 | 14 | 3 | 14 | 3 | 46 | 10 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | | |
| Flt Protected | 1.00 | | 0.97 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | | 2879 | | | | 1732 | | | 1864 | | |
| Flt Permitted | 1.00 | | 0.59 | | | | 0.94 | | | 0.87 | | |
| Satd. Flow (perm) | 2956 | | 1743 | | | | 1650 | | | 1672 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 444 | 998 | 585 | 15 | 3 | 15 | 3 | 48 | 11 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 444 | 0 | 1597 | 0 | 0 | 0 | 31 | 0 | 0 | 14 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | | Perm | | | | Perm | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 829 | | | | 355 | | | 360 | | |
| v/s Ratio Prot | 0.15 | | c0.18 | | | | | | | | | |
| v/s Ratio Perm | | | c0.62 | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.54 | | 3.34dl | | | | 0.09 | | | 0.04 | | |
| Uniform Delay, d1 | 20.0 | | 19.0 | | | | 20.4 | | | 20.2 | | |
| Progression Factor | 1.23 | | 0.67 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 0.2 | | 419.8 | | | | 0.5 | | | 0.2 | | |
| Delay (s) | 24.7 | | 432.5 | | | | 20.9 | | | 20.4 | | |
| Level of Service | C | | F | | | | C | | | C | | |
| Approach Delay (s) | 24.7 | | 432.5 | | | | 20.9 | | | 20.4 | | |
| Approach LOS | C | | F | | | | C | | | C | | |

Intersection Summary

| | | | |
|---|--------|----------------------|------|
| HCM Average Control Delay | 356.4 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.42 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 124.8% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 410 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 432 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 433 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.30 | |
| v/s Ratio Perm | | |
| v/c Ratio | 1.97 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 1.25 | |
| Incremental Delay, d2 | 448.0 | |
| Delay (s) | 482.3 | |
| Level of Service | F | |
| Approach Delay (s) | 482.3 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 206 | 733 | 1284 | 64 | 41 | 235 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3222 | 3234 | | 1629 | 1457 |
| Flt Permitted | | 0.51 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1670 | 3234 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 229 | 814 | 1427 | 71 | 46 | 261 |
| RTOR Reduction (vph) | 0 | 0 | 5 | 0 | 0 | 36 |
| Lane Group Flow (vph) | 0 | 1043 | 1493 | 0 | 46 | 225 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1028 | 1990 | | 426 | 381 |
| v/s Ratio Prot | | | 0.46 | | 0.03 | |
| v/s Ratio Perm | | c0.62 | | | | c0.15 |
| v/c Ratio | | 2.04dl | 0.75 | | 0.11 | 0.59 |
| Uniform Delay, d1 | | 12.5 | 8.9 | | 18.2 | 21.0 |
| Progression Factor | | 1.78 | 0.89 | | 0.99 | 0.97 |
| Incremental Delay, d2 | | 12.4 | 1.6 | | 0.5 | 6.6 |
| Delay (s) | | 34.6 | 9.5 | | 18.6 | 26.8 |
| Level of Service | | C | A | | B | C |
| Approach Delay (s) | | 34.6 | 9.5 | | 25.6 | |
| Approach LOS | | C | A | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|-----|
| HCM Average Control Delay | 20.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 80.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 56 | 697 | 1269 | 190 | 131 | 74 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2979 | | 1464 | 1373 |
| Flt Permitted | | 0.72 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2102 | 2979 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 59 | 734 | 1336 | 200 | 138 | 78 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 36 |
| Lane Group Flow (vph) | 0 | 793 | 1518 | 0 | 138 | 42 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1229 | 1742 | | 428 | 401 |
| v/s Ratio Prot | | | c0.51 | | c0.09 | |
| v/s Ratio Perm | | 0.38 | | | | 0.03 |
| v/c Ratio | | 0.65 | 0.87 | | 0.32 | 0.10 |
| Uniform Delay, d1 | | 9.0 | 11.4 | | 18.0 | 16.8 |
| Progression Factor | | 0.92 | 1.03 | | 0.94 | 1.01 |
| Incremental Delay, d2 | | 0.8 | 2.0 | | 2.0 | 0.5 |
| Delay (s) | | 9.0 | 13.8 | | 18.9 | 17.5 |
| Level of Service | | A | B | | B | B |
| Approach Delay (s) | | 9.0 | 13.8 | | 18.4 | |
| Approach LOS | | A | B | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 12.7 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.69 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 79.8% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 662 | 168 | 104 | 1164 | 460 | 79 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.98 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2223 | | 1770 | 2436 | 1820 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2223 | | 240 | 2436 | 1820 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 676 | 171 | 106 | 1188 | 469 | 81 |
| RTOR Reduction (vph) | 14 | 0 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 833 | 0 | 106 | 1188 | 541 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1060 | | 114 | 1162 | 672 | |
| v/s Ratio Prot | 0.37 | | | c0.49 | c0.30 | |
| v/s Ratio Perm | | | 0.44 | | | |
| v/c Ratio | 0.79 | | 0.93 | 1.02 | 0.80 | |
| Uniform Delay, d1 | 14.2 | | 16.0 | 17.0 | 18.4 | |
| Progression Factor | 1.51 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.8 | | 67.0 | 32.2 | 9.9 | |
| Delay (s) | 26.2 | | 83.0 | 49.2 | 28.3 | |
| Level of Service | C | | F | D | C | |
| Approach Delay (s) | 26.2 | | | 52.0 | 28.3 | |
| Approach LOS | C | | | D | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 39.0 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.93 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 91.0% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 708 | 95 | 251 | 1203 | 9 | 107 | 0 | 177 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.20 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.62 | |
| Satd. Flow (perm) | 405 | 3213 | 1422 | 455 | 3138 | 1366 | | 1309 | 1443 | | 636 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 787 | 106 | 279 | 1337 | 10 | 119 | 0 | 197 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 0 | 2 | 0 | 0 | 167 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 787 | 56 | 279 | 1337 | 8 | 0 | 119 | 30 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 44.7 | 44.7 | 44.7 | 64.0 | 64.0 | 64.0 | | 13.0 | 13.0 | | 13.0 | |
| Effective Green, g (s) | 44.7 | 44.7 | 44.7 | 64.0 | 64.0 | 64.0 | | 13.0 | 13.0 | | 13.0 | |
| Actuated g/C Ratio | 0.53 | 0.53 | 0.53 | 0.75 | 0.75 | 0.75 | | 0.15 | 0.15 | | 0.15 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 213 | 1690 | 748 | 560 | 2363 | 1029 | | 200 | 221 | | 97 | |
| v/s Ratio Prot | | 0.24 | | 0.10 | c0.43 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.28 | | 0.01 | | c0.09 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.47 | 0.07 | 0.50 | 0.57 | 0.01 | | 0.59 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.6 | 12.7 | 9.9 | 4.5 | 4.5 | 2.6 | | 33.5 | 31.1 | | 30.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.9 | 0.2 | 0.7 | 0.3 | 0.0 | | 4.7 | 0.3 | | 0.0 | |
| Delay (s) | 9.6 | 13.6 | 10.1 | 5.2 | 4.8 | 2.6 | | 38.2 | 31.4 | | 30.6 | |
| Level of Service | A | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 13.2 | | | 4.9 | | | 34.0 | | | 30.6 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.7 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.56 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 54.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 12 | 775 | 801 | 43 | 23 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1486 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.97 | |
| Satd. Flow (perm) | | 2843 | 3017 | | 1486 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 13 | 861 | 890 | 48 | 26 | 10 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 874 | 934 | 0 | 27 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1042 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.31 | | c0.02 | |
| v/s Ratio Perm | | c0.31 | | | | |
| v/c Ratio | | 0.84 | 0.44 | | 0.23 | |
| Uniform Delay, d1 | | 26.1 | 5.4 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 8.1 | 0.3 | | 4.6 | |
| Delay (s) | | 34.2 | 0.3 | | 43.6 | |
| Level of Service | | C | A | | D | |
| Approach Delay (s) | | 34.2 | 0.3 | | 43.6 | |
| Approach LOS | | C | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 17.2 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.62 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 42.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 78 | 423 | 1 | 26 | 554 | 78 | 0 | 0 | 1 | 43 | 3 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.96 | 1.00 |
| Satd. Flow (prot) | | 1728 | | | 3231 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.79 | | | 0.93 | | | 1.00 | | | 0.94 | 1.00 |
| Satd. Flow (perm) | | 1382 | | | 3025 | | | 1432 | | | 1581 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 87 | 470 | 1 | 29 | 616 | 87 | 0 | 0 | 1 | 48 | 3 | 101 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 68 |
| Lane Group Flow (vph) | 0 | 558 | 0 | 0 | 720 | 0 | 0 | 0 | 0 | 0 | 51 | 33 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 504 | | | 1635 | | | 152 | | | 470 | 422 |
| v/s Ratio Prot | | | | | c0.07 | | | 0.00 | | | c0.02 | |
| v/s Ratio Perm | | c0.40 | | | 0.16 | | | | | | c0.01 | 0.03 |
| v/c Ratio | | 1.11 | | | 0.44 | | | 0.00 | | | 0.11 | 0.08 |
| Uniform Delay, d1 | | 27.0 | | | 12.3 | | | 34.0 | | | 21.9 | 19.6 |
| Progression Factor | | 1.00 | | | 1.76 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 72.7 | | | 0.1 | | | 0.0 | | | 0.5 | 0.4 |
| Delay (s) | | 99.7 | | | 21.7 | | | 34.0 | | | 22.3 | 20.0 |
| Level of Service | | F | | | C | | | C | | | C | B |
| Approach Delay (s) | | 99.7 | | | 21.7 | | | 34.0 | | | 20.8 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 51.8 | | | HCM Level of Service | | | D | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | | |
| Intersection Capacity Utilization | | 71.4% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 997 | 57 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1556 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 286 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1049 | 60 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 22 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1103 | 0 | 0 | 93 | 0 | 0 | 121 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 150 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.14 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.27 | 0.41 | | 0.12 | 0.70 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.6 | 9.4 | | 7.9 | 11.6 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.38 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.5 | 0.8 | | 0.7 | 2.3 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.1 | 10.2 | | 6.2 | 18.4 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.0 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 787 | 5 | 31 | 619 | 40 | 0 | 0 | 0 | 578 | 88 | 375 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.92 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 790 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 336 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 828 | 5 | 33 | 652 | 42 | 0 | 0 | 0 | 608 | 93 | 395 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 168 |
| Lane Group Flow (vph) | 26 | 833 | 0 | 33 | 652 | 24 | 0 | 0 | 0 | 608 | 93 | 227 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 160 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.20 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.15 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.36 | 0.08 | | | | 0.80 | 0.23 | 0.66 |
| Uniform Delay, d1 | 31.6 | 38.6 | | 15.2 | 15.7 | 13.1 | | | | 47.2 | 40.6 | 45.4 |
| Progression Factor | 0.85 | 0.86 | | 0.34 | 0.75 | 1.27 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 8.8 | 1.4 | 9.8 |
| Delay (s) | 28.9 | 37.4 | | 5.2 | 12.2 | 17.0 | | | | 56.0 | 42.0 | 55.2 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.2 | | | 12.1 | | | 0.0 | | | 54.5 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013





















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|--------|
| Lane Configurations | ↔↔ | ↕↔ | | ↔ | ↕↕ | ↔ | | ↕↕ | ↔ | ↔ | | ↔ |
| Volume (vph) | 338 | 809 | 218 | 53 | 560 | 280 | 100 | 247 | 54 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3263 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 356 | 852 | 229 | 56 | 589 | 295 | 105 | 260 | 57 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 222 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 356 | 1063 | 0 | 56 | 589 | 73 | 0 | 365 | 15 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1707 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.62 | | 0.53 | 0.76 | 0.29 | | 0.51 | 0.05 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 21.9 | | 59.2 | 45.5 | 39.8 | | 45.0 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.94 | 0.17 | | 1.00 | 1.00 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.0 | 7.0 | 2.9 | | 2.6 | 0.3 | 49.7 | | 0.4 |
| Delay (s) | 30.5 | 4.7 | | 77.2 | 52.5 | 42.7 | | 45.2 | 40.9 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 50.9 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 885 | 165 | 102 | 813 | 0 | 74 | 0 | 89 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.18 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 304 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 983 | 183 | 113 | 903 | 0 | 82 | 0 | 99 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1151 | 0 | 113 | 903 | 0 | 82 | 0 | 32 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 182 | 1889 | | 346 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | c0.38 | | | 0.29 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.37 | | | c0.08 | | 0.02 | | 0.01 | |
| v/c Ratio | | 0.64 | | 0.62 | 0.48 | | 0.24 | | 0.07 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 13.0 | | 12.7 | 11.2 | | 25.0 | | 23.6 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.8 | | 14.9 | 0.9 | | 1.6 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 14.7 | | 27.6 | 12.1 | | 26.6 | | 23.9 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.7 | | | 13.8 | | | 25.1 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street








1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|-------|-------|-------|----------------------|-------|------|------|------|--------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | ↰ | ↱ | ↰ | ↰ | ↱↱↱ | | | ↱↱↱ | |
| Volume (vph) | 0 | 0 | 0 | 291 | 0 | 1188 | 214 | 682 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 297 | 0 | 1212 | 218 | 696 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 297 | 0 | 1212 | 218 | 696 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.19 | | c0.79 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.65 | | 2.77 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.3 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.10 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.1 | | 804.4 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 39.4 | | 841.9 | 21.6 | 18.3 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 684.0 | | | 19.1 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 306.7 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 99.3% | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|------|------|----------------------|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 324 | 770 | 146 | 0 | 0 | 0 | 0 | 572 | 403 | 355 | 727 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 334 | 794 | 151 | 0 | 0 | 0 | 0 | 590 | 415 | 366 | 749 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 301 | 964 | 0 | 0 | 0 | 0 | 0 | 590 | 415 | 366 | 749 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | | 0.14 | | c0.23 | 0.16 | |
| v/s Ratio Perm | 0.20 | 0.31 | | | | | | | c0.18 | | | |
| v/c Ratio | 0.62 | 0.94 | | | | | | 0.51 | 0.69 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 30.0 | 34.6 | | | | | | 32.6 | 34.6 | 33.8 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.21 | |
| Incremental Delay, d2 | 5.7 | 17.5 | | | | | | 1.4 | 5.9 | 4.6 | 0.1 | |
| Delay (s) | 35.7 | 52.0 | | | | | | 38.7 | 45.4 | 33.7 | 2.3 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | | 48.2 | | | 0.0 | | | 41.5 | | | 12.6 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.5 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 99.3% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013








| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 287 | 25 | 24 | 11 | 157 | 0 | 0 | 147 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 979 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 319 | 28 | 27 | 12 | 174 | 0 | 0 | 163 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 319 | 37 | 0 | 12 | 174 | 0 | 0 | 168 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 636 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.09 | | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | 0.02 | 0.16 | | | 0.16 | |
| Uniform Delay, d1 | | | | 24.4 | 20.0 | | 10.5 | 8.0 | | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.05 | 1.17 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.8 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 29.2 | 20.1 | | 11.1 | 9.7 | | | 10.1 | |
| Level of Service | | | | C | C | | B | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 27.9 | | | 9.8 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 36.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|------|---|----------------------|-------|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 142 | 43 | 46 | 389 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1718 | | 1004 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 149 | 45 | 48 | 409 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 181 | 0 | 48 | 409 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 808 | | 639 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.11 | | 0.01 | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.22 | | 0.08 | 0.37 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.3 | | 8.6 | 9.2 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.97 | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.6 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.0 | | 8.6 | 8.9 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 14.0 | | | 8.9 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 41.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | W | | W | ↑ | ↑ | W |
| Volume (vph) | 46 | 40 | 12 | 183 | 273 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1753 | | 1765 | 1782 | 1656 | |
| Flt Permitted | 0.97 | | 0.52 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1753 | | 966 | 1782 | 1656 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 44 | 13 | 203 | 303 | 30 |
| RTOR Reduction (vph) | 30 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 65 | 0 | 13 | 203 | 328 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 535 | 987 | 917 | |
| v/s Ratio Prot | c0.04 | | | 0.11 | c0.20 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.02 | 0.21 | 0.36 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.3 | 8.1 | |
| Progression Factor | 1.00 | | 0.49 | 0.60 | 1.44 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 0.9 | |
| Delay (s) | 15.9 | | 3.3 | 4.8 | 12.6 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.7 | 12.6 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.4 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.27 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 28.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 265 | 9 | 257 | 132 | 0 | 0 | 277 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 0.99 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3771 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 0.99 | | 0.48 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3771 | | 854 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 294 | 10 | 286 | 147 | 0 | 0 | 308 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 335 | 0 | 286 | 147 | 0 | 0 | 308 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1153 | | 611 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.09 | | | 0.18 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.47 | 0.15 | | | 0.40 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 13.5 | 7.5 | | | 15.8 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.6 | 0.3 | | | 1.5 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.1 | 7.8 | | | 17.3 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.3 | | | 17.1 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 53.8% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

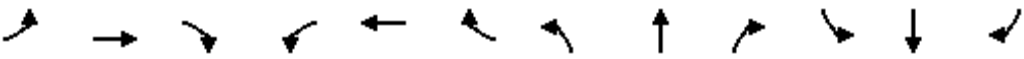
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 205 | 30 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3287 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3287 | | 1061 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 106 | 104 | 42 | 148 | 228 | 33 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 242 | 0 | 148 | 246 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1490 | | 640 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.07 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.16 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.84 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.1 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↔ | ↔ | | ↔ | ↔ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 273 | 24 | 159 | 589 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3172 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 600 | 3172 | | 1008 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 287 | 25 | 167 | 620 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 303 | 0 | 167 | 665 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 336 | 1776 | | 564 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.2 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 2.9 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013

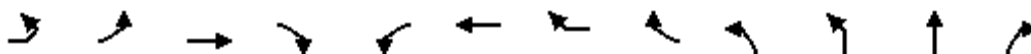


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 35 | 182 | 64 | 238 | 558 | 77 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 39 | 202 | 71 | 264 | 620 | 86 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 241 | 159 | 176 | 413 | 292 | |
| Volume Left (vph) | 39 | 71 | 0 | 0 | 0 | |
| Volume Right (vph) | 202 | 0 | 0 | 0 | 86 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.7 | 6.4 | 6.2 | 5.8 | 5.6 | |
| Degree Utilization, x | 0.38 | 0.28 | 0.30 | 0.66 | 0.45 | |
| Capacity (veh/h) | 599 | 538 | 557 | 611 | 632 | |
| Control Delay (s) | 12.1 | 10.8 | 10.7 | 18.2 | 11.9 | |
| Approach Delay (s) | 12.1 | 10.7 | | 15.6 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 13.6 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 51.7% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013



| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
|------------------------|------|-------|-------|------|------|-------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 32 | 35 | 378 | 18 | 24 | 410 | 77 | 81 | 55 | 68 | 351 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3250 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 930 | 1731 | 1421 | | | 257 | 3250 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 420 | 20 | 27 | 456 | 86 | 90 | 61 | 76 | 390 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 36 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 420 | 8 | 27 | 456 | 140 | 0 | 0 | 137 | 419 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 221 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.26 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.03 | | 0.10 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.58 | 0.01 | 0.12 | 1.11 | 0.41 | | | 1.99 | 0.48 | |
| Uniform Delay, d1 | | 21.6 | 23.4 | 17.8 | 31.4 | 40.0 | 33.8 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.4 | 0.0 | 1.1 | 76.5 | 3.7 | | | 491.0 | 1.9 | |
| Delay (s) | | 23.5 | 26.8 | 17.9 | 32.5 | 116.5 | 37.5 | | | 529.5 | 34.3 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.9 | | | 92.0 | | | | | 154.8 | |
| Approach LOS | | | C | | | F | | | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 139.0 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.43 | | |
| Actuated Cycle Length (s) | 105.0 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 102.5% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 105 | 559 | 80 | 101 | 4 | 110 | 587 | 190 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.38 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 675 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 621 | 89 | 112 | 4 | 122 | 652 | 211 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 117 | 810 | 0 | 0 | 0 | 126 | 837 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 177 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.07 | | |
| v/s Ratio Perm | 0.17 | | | | | | c0.32 | |
| v/c Ratio | 0.66 | 0.95 | | | | 0.38 | 1.63 | |
| Uniform Delay, d1 | 34.6 | 38.1 | | | | 36.7 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 17.8 | 21.4 | | | | 3.2 | 291.8 | |
| Delay (s) | 52.4 | 59.5 | | | | 39.9 | 334.0 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 58.6 | | | | 296.6 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 64 | 589 | 0 | 0 | 495 | 49 | 83 | 51 | 18 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1957 | | | 1841 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1526 | | | 1957 | | | 1841 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 71 | 654 | 0 | 0 | 550 | 54 | 92 | 57 | 20 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 725 | 0 | 0 | 604 | 0 | 0 | 169 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 939 | | | 1204 | | | 481 | | | | |
| v/s Ratio Prot | | | | | 0.31 | | | | | | | |
| v/s Ratio Perm | | 0.48 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.77 | | | 0.50 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 9.2 | | | 7.0 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.1 | | | 1.5 | | | 2.0 | | | | |
| Delay (s) | | 15.3 | | | 8.4 | | | 21.5 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 15.3 | | | 8.4 | | | 21.5 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 69 | 420 | 159 | 114 | 327 | 122 | 104 | 625 | 82 | 136 | 751 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1985 | 1434 | | 1950 | 1444 | 1546 | 3040 | 1296 | 1505 | 3069 | 1252 |
| Flt Permitted | | 0.41 | 1.00 | | 0.57 | 1.00 | 0.23 | 1.00 | 1.00 | 0.30 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 822 | 1434 | | 1119 | 1444 | 379 | 3040 | 1296 | 468 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 73 | 442 | 167 | 120 | 344 | 128 | 109 | 658 | 86 | 143 | 791 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 99 | 0 | 0 | 91 | 0 | 0 | 51 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 515 | 68 | 0 | 464 | 37 | 109 | 658 | 35 | 143 | 791 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 447 | 587 | | 320 | 413 | 275 | 1225 | 522 | 315 | 1248 | 509 |
| v/s Ratio Prot | | c0.11 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.36 | 0.05 | | c0.41 | 0.03 | 0.16 | | 0.03 | 0.18 | | 0.04 |
| v/c Ratio | | 1.15 | 0.12 | | 1.45 | 0.09 | 0.40 | 0.54 | 0.07 | 0.45 | 0.63 | 0.10 |
| Uniform Delay, d1 | | 31.0 | 19.2 | | 37.5 | 27.5 | 16.4 | 23.9 | 19.2 | 15.9 | 24.9 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.76 | 1.56 | 2.71 |
| Incremental Delay, d2 | | 91.3 | 0.4 | | 219.2 | 0.4 | 0.9 | 1.7 | 0.2 | 1.0 | 2.4 | 0.4 |
| Delay (s) | | 122.3 | 19.6 | | 256.7 | 27.9 | 17.3 | 25.6 | 19.5 | 29.0 | 41.2 | 52.4 |
| Level of Service | | F | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 97.2 | | | 207.3 | | | 23.9 | | | 40.6 | |
| Approach LOS | | F | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 79.5 | | | | HCM Level of Service | | | E | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 93.5% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 83 | 474 | 97 | 90 | 451 | 90 | 53 | 59 | 67 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1645 | | | 1799 | | | | |
| Flt Permitted | | 0.85 | | | 0.84 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1414 | | | 1387 | | | 1799 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 92 | 527 | 108 | 100 | 501 | 100 | 59 | 66 | 74 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 717 | 0 | 0 | 692 | 0 | 0 | 167 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 870 | | | 854 | | | 471 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.51 | | | 0.50 | | | 0.09 | | | | |
| v/c Ratio | | 0.82 | | | 0.81 | | | 0.35 | | | | |
| Uniform Delay, d1 | | 9.8 | | | 9.6 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 8.8 | | | 8.2 | | | 2.1 | | | | |
| Delay (s) | | 18.5 | | | 17.8 | | | 21.6 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 18.5 | | | 17.8 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.68 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 67.3% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























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| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 53 | 472 | 80 | 74 | 509 | 36 | 39 | 76 | 72 | 53 | 235 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1684 | 1382 | | 1713 | 1417 | | 1685 | 1455 | | 1878 | |
| Flt Permitted | | 0.90 | 1.00 | | 0.86 | 1.00 | | 0.82 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1529 | 1382 | | 1490 | 1417 | | 1409 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 497 | 84 | 78 | 536 | 38 | 41 | 80 | 76 | 56 | 247 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 36 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 0 | 553 | 48 | 0 | 614 | 26 | 0 | 121 | 24 | 0 | 351 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 877 | 792 | | 854 | 812 | | 451 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.36 | 0.03 | | c0.41 | 0.02 | | 0.09 | 0.02 | | c0.20 | |
| v/c Ratio | | 0.63 | 0.06 | | 0.72 | 0.03 | | 0.27 | 0.05 | | 0.62 | |
| Uniform Delay, d1 | | 10.7 | 7.1 | | 11.6 | 7.0 | | 19.0 | 17.6 | | 21.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.4 | 0.1 | | 5.2 | 0.1 | | 1.5 | 0.2 | | 5.0 | |
| Delay (s) | | 14.1 | 7.2 | | 16.8 | 7.0 | | 20.4 | 17.8 | | 26.6 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.2 | | | 16.2 | | | 19.4 | | | 26.6 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 17.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.68 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 98.8% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 479 | 34 | 44 | 521 | 52 | 45 | 165 | 55 | 117 | 199 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1532 | 3065 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.36 | 1.00 | | 0.40 | 1.00 | | 0.59 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 581 | 3065 | | 692 | 3730 | | 977 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 532 | 38 | 49 | 579 | 58 | 50 | 183 | 61 | 130 | 221 | 34 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 20 |
| Lane Group Flow (vph) | 66 | 562 | 0 | 49 | 625 | 0 | 50 | 183 | 24 | 130 | 221 | 14 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 277 | 1462 | | 330 | 1779 | | 391 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.18 | | | 0.17 | | | 0.11 | | | c0.13 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.05 | | 0.02 | 0.12 | | 0.01 |
| v/c Ratio | 0.24 | 0.38 | | 0.15 | 0.35 | | 0.13 | 0.28 | 0.04 | 0.31 | 0.33 | 0.02 |
| Uniform Delay, d1 | 10.0 | 10.9 | | 9.6 | 10.7 | | 12.3 | 13.1 | 11.9 | 13.4 | 13.5 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.84 | 0.89 | 0.76 | 0.59 | 0.59 | 0.27 |
| Incremental Delay, d2 | 2.0 | 0.8 | | 0.9 | 0.5 | | 0.7 | 1.0 | 0.2 | 1.9 | 1.3 | 0.1 |
| Delay (s) | 12.1 | 11.7 | | 10.5 | 11.2 | | 11.0 | 12.7 | 9.2 | 9.8 | 9.3 | 3.3 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.7 | | | 11.2 | | | 11.7 | | | 8.9 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 409 | 81 | 70 | 376 | 64 | 57 | 179 | 64 | 87 | 240 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1327 | 3134 | | 1519 | 3129 | | 1579 | 2918 | | 1452 | 2998 | |
| Flt Permitted | 0.46 | 1.00 | | 0.42 | 1.00 | | 0.54 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 639 | 3134 | | 678 | 3129 | | 891 | 2918 | | 908 | 2998 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 431 | 85 | 74 | 396 | 67 | 60 | 188 | 67 | 92 | 253 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 516 | 0 | 74 | 463 | 0 | 60 | 216 | 0 | 92 | 293 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 307 | 1504 | | 325 | 1502 | | 368 | 1206 | | 375 | 1239 | |
| v/s Ratio Prot | c0.16 | | | 0.15 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.11 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.34 | | 0.23 | 0.31 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.2 | 12.1 | | 11.4 | 11.9 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.5 | 0.6 | | 1.6 | 0.5 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.8 | 12.8 | | 13.0 | 12.4 | | 14.8 | 14.3 | | 15.9 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.5 | | | 14.4 | | | 15.0 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 51.5% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 94 | 428 | 61 | 31 | 503 | 46 | 82 | 194 | 57 | 76 | 473 | 109 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1594 | 1651 | | 1369 | 1974 | | 1534 | 2998 | | 1534 | 3013 | |
| Flt Permitted | 0.26 | 1.00 | | 0.32 | 1.00 | | 0.28 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 442 | 1651 | | 464 | 1974 | | 453 | 2998 | | 951 | 3013 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 99 | 451 | 64 | 33 | 529 | 48 | 86 | 204 | 60 | 80 | 498 | 115 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 99 | 515 | 0 | 33 | 577 | 0 | 86 | 264 | 0 | 80 | 613 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 44.0 | 39.4 | | 40.8 | 37.8 | | 26.6 | 21.8 | | 26.6 | 21.8 | |
| Effective Green, g (s) | 44.0 | 37.4 | | 40.8 | 35.8 | | 26.6 | 19.8 | | 26.6 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 291 | 726 | | 255 | 831 | | 203 | 698 | | 331 | 702 | |
| v/s Ratio Prot | c0.02 | c0.31 | | 0.00 | 0.29 | | c0.02 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.16 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.34 | 0.71 | | 0.13 | 0.69 | | 0.42 | 0.38 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 22.2 | 19.4 | | 19.6 | 20.1 | | 29.0 | 27.4 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.7 | 5.8 | | 0.2 | 4.8 | | 1.4 | 1.6 | | 0.4 | 14.2 | |
| Delay (s) | 22.9 | 25.2 | | 19.8 | 24.9 | | 30.5 | 29.0 | | 22.3 | 45.5 | |
| Level of Service | C | C | | B | C | | C | C | | C | D | |
| Approach Delay (s) | | 24.8 | | | 24.6 | | | 29.3 | | | 42.9 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 77.7% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 73 | 379 | 63 | 111 | 483 | 112 | 64 | 150 | 55 | 121 | 348 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3680 | | | 3131 | | 1652 | 3237 | | 1549 | 3026 | |
| Flt Permitted | | 0.73 | | | 0.74 | | 0.44 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | | 2708 | | | 2332 | | 766 | 3237 | | 994 | 3026 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 81 | 421 | 70 | 123 | 537 | 124 | 71 | 167 | 61 | 134 | 387 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 572 | 0 | 0 | 784 | 0 | 71 | 228 | 0 | 134 | 474 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1228 | | | 1057 | | 337 | 1424 | | 437 | 1331 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.21 | | | c0.34 | | 0.09 | | | 0.13 | | |
| v/c Ratio | | 0.47 | | | 0.74 | | 0.21 | 0.16 | | 0.31 | 0.36 | |
| Uniform Delay, d1 | | 14.2 | | | 16.9 | | 13.0 | 12.7 | | 13.6 | 13.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.3 | | | 4.7 | | 1.4 | 0.2 | | 1.8 | 0.7 | |
| Delay (s) | | 15.5 | | | 21.6 | | 14.4 | 12.9 | | 15.4 | 14.7 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.5 | | | 21.6 | | | 13.2 | | | 14.8 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 71.1% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 93 | 827 | 6 | 19 | 554 | 236 | 1 | 1 | 9 | 202 | 1 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.40 | 1.00 | | 0.27 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 679 | 3206 | | 470 | 3320 | 1485 | | 1519 | | | 2535 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 103 | 919 | 7 | 21 | 616 | 262 | 1 | 1 | 10 | 224 | 1 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 7 | 0 | 0 | 53 | 0 |
| Lane Group Flow (vph) | 103 | 926 | 0 | 21 | 616 | 166 | 0 | 5 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | Perm | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | 6 | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 6 | | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 18.6 | | | 18.6 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 431 | 2033 | | 298 | 2105 | 942 | | 389 | | | 649 | |
| v/s Ratio Prot | c0.29 | | | 0.19 | | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.04 | | 0.11 | | 0.00 | | | c0.10 | |
| v/c Ratio | 0.24 | 0.46 | | 0.07 | 0.29 | 0.18 | | 0.01 | | | 0.39 | |
| Uniform Delay, d1 | 5.7 | 6.8 | | 5.1 | 6.0 | 5.5 | | 20.2 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.3 | 0.7 | | 0.5 | 0.4 | 0.4 | | 0.1 | | | 1.7 | |
| Delay (s) | 7.0 | 7.6 | | 5.6 | 6.3 | 5.9 | | 20.2 | | | 24.1 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 7.5 | | | 6.2 | | | 20.2 | | 24.1 | | 24.1 | |
| Approach LOS | A | | | A | | | C | | C | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.3 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.44 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 72.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.1% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 124 | 216 | 119 | 94 | 162 | 56 | 140 | 876 | 87 | 128 | 816 | 97 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.24 | 1.00 | | 0.21 | 1.00 | 1.00 | 0.18 | 1.00 | 1.00 |
| Satd. Flow (perm) | 746 | 1504 | | 393 | 1585 | | 323 | 3069 | 1337 | 285 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 131 | 227 | 125 | 99 | 171 | 59 | 147 | 922 | 92 | 135 | 859 | 102 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 131 | 329 | 0 | 99 | 215 | 0 | 147 | 922 | 52 | 135 | 859 | 54 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 286 | 389 | | 203 | 410 | | 235 | 1264 | 551 | 222 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.22 | | c0.03 | 0.14 | | c0.04 | c0.30 | | 0.04 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.25 | | 0.04 | 0.24 | | 0.04 |
| v/c Ratio | 0.46 | 0.85 | | 0.49 | 0.52 | | 0.63 | 0.73 | 0.09 | 0.61 | 0.67 | 0.10 |
| Uniform Delay, d1 | 22.5 | 29.9 | | 22.7 | 27.0 | | 14.6 | 21.0 | 15.3 | 14.8 | 20.3 | 15.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.79 | 0.53 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.2 | 19.8 | | 8.2 | 4.7 | | 11.0 | 3.4 | 0.3 | 11.8 | 2.9 | 0.4 |
| Delay (s) | 27.7 | 49.6 | | 30.9 | 31.8 | | 20.7 | 19.9 | 8.5 | 26.6 | 23.2 | 15.7 |
| Level of Service | C | D | | C | C | | C | B | A | C | C | B |
| Approach Delay (s) | | 43.7 | | | 31.5 | | | 19.1 | | | 22.9 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 179 | 37 | 20 | 173 | 22 | 32 | 141 | 38 | 46 | 251 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1836 | | | 1848 | | | 1938 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.92 | | | 0.94 | |
| Satd. Flow (perm) | | 1781 | | | 1790 | | | 1800 | | | 1871 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 185 | 38 | 21 | 178 | 23 | 33 | 145 | 39 | 47 | 259 | 51 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 236 | 0 | 0 | 216 | 0 | 0 | 205 | 0 | 0 | 348 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 831 | | | 864 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.11 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.25 | | | 0.40 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.6 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.69 | | | 1.23 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 13.9 | | | 9.7 | | | 13.8 | | | 13.0 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 13.9 | | | 9.7 | | | 13.8 | | | 13.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.7 | | | HCM Level of Service | | | | | B | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 50.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 190 | 39 | 25 | 180 | 19 | 49 | 199 | 31 | 42 | 206 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3056 | | 1576 | 3119 | | 1518 | 3119 | | 1550 | 3075 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3056 | | 987 | 3119 | | 935 | 3119 | | 969 | 3075 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 211 | 43 | 28 | 200 | 21 | 54 | 221 | 34 | 47 | 229 | 42 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 27 | 228 | 0 | 28 | 209 | 0 | 54 | 241 | 0 | 47 | 254 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 893 | | 289 | 912 | | 547 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.07 | | | 0.07 | | | 0.08 | | | c0.08 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.14 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.96 | | 0.77 | 0.76 | | 1.29 | 1.29 | | 0.40 | 0.36 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.3 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.3 | 17.5 | | 13.5 | 13.8 | | 8.0 | 8.0 | | 2.6 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.4 | | | 13.8 | | | 8.0 | | | 2.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.0 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 66 | 165 | 41 | 24 | 153 | 37 | 27 | 245 | 16 | 40 | 321 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2936 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.62 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1014 | 3056 | | 977 | 2936 | | | 1822 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 73 | 183 | 46 | 27 | 170 | 41 | 30 | 272 | 18 | 44 | 357 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 73 | 201 | 0 | 27 | 186 | 0 | 0 | 317 | 0 | 0 | 433 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 406 | 1222 | | 391 | 1174 | | | 869 | | | 878 | |
| v/s Ratio Prot | 0.07 | | | 0.06 | | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | | 0.17 | | | c0.24 | |
| v/c Ratio | 0.18 | 0.16 | | 0.07 | 0.16 | | | 0.36 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.03 | 0.98 | | 0.78 | 0.76 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.0 | 12.5 | | 9.7 | 9.8 | | | 11.9 | | | 13.6 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 12.9 | | | 9.8 | | | 11.9 | | | 13.6 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.3 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 57.4% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 19 | 153 | 26 | 40 | 230 | 11 | 33 | 360 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.58 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 1013 | 1970 | | 1087 | 1975 | | | 1800 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 21 | 170 | 29 | 44 | 256 | 12 | 37 | 400 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 21 | 199 | 0 | 0 | 312 | 0 | 0 | 500 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 312 | 606 | | 334 | 608 | | | 1025 | | | 1088 | |
| v/s Ratio Prot | | 0.08 | | | c0.10 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.17 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.06 | 0.33 | | | 0.30 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.3 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.82 | 0.80 | | 0.93 | 0.93 | | | 0.97 | | | 1.00 | |
| Incremental Delay, d2 | 1.1 | 1.0 | | 0.4 | 1.4 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.6 | 14.5 | | 15.1 | 17.5 | | | 7.8 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.5 | | | 17.3 | | | 7.8 | | | 9.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 51 | 12 | 92 | 2 | 5 | 10 | 59 | 223 | 5 | 5 | 442 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1726 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.41 | 1.00 | 1.00 | 0.60 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1726 | | 1224 | 1808 | | 693 | 1647 | 1428 | 1049 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 13 | 102 | 2 | 6 | 11 | 66 | 248 | 6 | 6 | 491 | 80 |
| RTOR Reduction (vph) | 0 | 74 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 57 | 41 | 0 | 2 | 9 | 0 | 66 | 248 | 4 | 6 | 491 | 52 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 339 | 501 | | 416 | 988 | 857 | 629 | 1200 | 898 |
| v/s Ratio Prot | | 0.02 | | | 0.01 | | | 0.15 | | | c0.25 | |
| v/s Ratio Perm | c0.04 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.15 | 0.09 | | 0.01 | 0.02 | | 0.16 | 0.25 | 0.00 | 0.01 | 0.41 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.7 | 6.1 | 5.2 | 5.2 | 6.9 | 5.4 |
| Progression Factor | 1.41 | 2.83 | | 1.00 | 1.00 | | 0.79 | 0.74 | 0.91 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.0 | 0.1 |
| Delay (s) | 25.8 | 49.5 | | 17.1 | 17.1 | | 5.2 | 5.0 | 4.8 | 5.3 | 7.9 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 41.7 | | | 17.1 | | | 5.1 | | | 7.6 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 51.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  | |
| Volume (vph) | 0 | 255 | 163 | 197 | 214 | 0 | 0 | 0 | 0 | 111 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.40 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 719 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 268 | 172 | 207 | 225 | 0 | 0 | 0 | 0 | 117 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 339 | 0 | 207 | 225 | 0 | 0 | 0 | 0 | 117 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | | | D.P+P | | | | | | | | Split | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 565 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | 0.12 | | c0.07 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | c0.12 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.37 | 0.12 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.7 | 11.1 | | | | | 22.5 | 27.6 | |
| Progression Factor | | 1.00 | | 2.25 | 2.17 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.6 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.5 | | 32.3 | 24.3 | | | | | 23.4 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.5 | | | 28.1 | | | 0.0 | | | 30.1 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 62.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | |  |  |  | | | |
| Volume (vph) | 141 | 225 | 0 | 0 | 338 | 119 | 73 | 511 | 224 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1675 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.32 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 568 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 237 | 0 | 0 | 356 | 125 | 77 | 538 | 236 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 167 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 237 | 0 | 0 | 447 | 0 | 77 | 538 | 69 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 687 | 1974 | | | 728 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.16 | | 0.04 | c0.30 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.22 | 0.12 | | | 0.61 | | 0.15 | 1.03 | 0.15 | | | |
| Uniform Delay, d1 | 10.4 | 8.1 | | | 33.6 | | 26.6 | 36.0 | 26.6 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.1 | | | 3.8 | | 0.6 | 46.3 | 0.7 | | | |
| Delay (s) | 5.0 | 3.6 | | | 37.4 | | 27.2 | 82.3 | 27.3 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 37.4 | | | 62.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 491 | 455 | 77 | 507 | 0 | 0 | 0 | 0 | 13 | 436 | 301 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3099 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3099 | | 205 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 511 | 474 | 80 | 528 | 0 | 0 | 0 | 0 | 14 | 454 | 314 |
| RTOR Reduction (vph) | 0 | 167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 |
| Lane Group Flow (vph) | 0 | 818 | 0 | 80 | 528 | 0 | 0 | 0 | 0 | 14 | 454 | 107 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1116 | | 382 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.26 | | 0.04 | c0.16 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.73 | | 0.21 | 0.28 | | | | | 0.03 | 0.42 | 0.21 |
| Uniform Delay, d1 | | 27.8 | | 13.9 | 10.5 | | | | | 22.0 | 25.4 | 23.4 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 4.3 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 0.9 |
| Delay (s) | | 32.1 | | 15.0 | 12.8 | | | | | 22.1 | 26.6 | 24.3 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 32.1 | | | 13.1 | | | 0.0 | | | 25.6 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 90.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

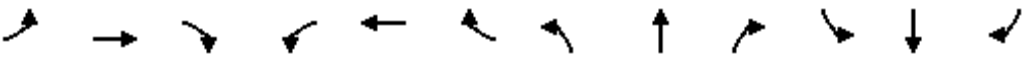
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 401 | 99 | 0 | 0 | 142 | 6 | 441 | 456 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.66 | 0.72 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1014 | 2311 | | | 3168 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 413 | 102 | 0 | 0 | 146 | 6 | 455 | 470 | 57 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 36 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 206 | 309 | 0 | 0 | 149 | 0 | 455 | 470 | 21 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 681 | 1466 | | | 475 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.11 | 0.08 | | | c0.05 | | c0.29 | 0.28 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.30 | 0.21 | | | 0.31 | | 0.79 | 0.77 | 0.04 | | | |
| Uniform Delay, d1 | 14.0 | 13.5 | | | 37.9 | | 28.1 | 27.7 | 20.1 | | | |
| Progression Factor | 0.25 | 0.27 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.7 | | 10.7 | 9.0 | 0.1 | | | |
| Delay (s) | 4.3 | 3.8 | | | 39.6 | | 38.7 | 36.7 | 20.2 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 4.0 | | | 39.6 | | | 36.7 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.7 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 90.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street
















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 315 | 116 | 105 | 260 | 107 | 83 | 663 | 72 | 99 | 875 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2955 | | | 2936 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.77 | | | 0.73 | | 0.16 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2307 | | | 2163 | | 261 | 3069 | 1309 | 433 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 328 | 121 | 109 | 271 | 111 | 86 | 691 | 75 | 103 | 911 | 67 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 32 | 0 | 0 | 0 | 46 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 498 | 0 | 0 | 459 | 0 | 86 | 691 | 29 | 103 | 911 | 34 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1023 | | | 713 | | 169 | 1210 | 508 | 234 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.02 | 0.23 | | 0.02 | c0.29 | |
| v/s Ratio Perm | | 0.17 | | | c0.21 | | 0.19 | | 0.02 | 0.17 | | 0.03 |
| v/c Ratio | | 0.49 | | | 0.64 | | 0.51 | 0.57 | 0.06 | 0.44 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 17.8 | | | 24.3 | | 16.6 | 20.1 | 16.3 | 15.8 | 22.1 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.43 | 0.68 | 0.67 | 1.10 | 1.17 | 1.77 |
| Incremental Delay, d2 | | 1.7 | | | 4.4 | | 9.7 | 1.8 | 0.2 | 4.3 | 3.1 | 0.2 |
| Delay (s) | | 19.4 | | | 28.7 | | 33.4 | 15.4 | 11.1 | 21.8 | 28.9 | 29.2 |
| Level of Service | | B | | | C | | C | B | B | C | C | C |
| Approach Delay (s) | | 19.4 | | | 28.7 | | | 16.9 | | | 28.2 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 74.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 410 | 0 | 0 | 353 | 81 | 53 | 43 | 32 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1734 | | | 1704 | | | 1654 | | | | |
| Flt Permitted | | 0.87 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1525 | | | 1704 | | | 1654 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 456 | 0 | 0 | 392 | 90 | 59 | 48 | 36 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 540 | 0 | 0 | 469 | 0 | 0 | 125 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 892 | | | 996 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.28 | | | | | | | |
| v/s Ratio Perm | | 0.35 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.61 | | | 0.47 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.7 | | | 7.7 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.71 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.0 | | | 1.4 | | | 1.3 | | | | |
| Delay (s) | | 11.7 | | | 6.9 | | | 18.9 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 11.7 | | | 6.9 | | | 18.9 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 69.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 29 | 374 | 37 | 37 | 355 | 48 | 30 | 112 | 37 | 52 | 148 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1954 | | | 1941 | | | 2968 | | | 2979 | |
| Flt Permitted | | 0.95 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1872 | | | 1828 | | | 2647 | | | 2596 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 32 | 416 | 41 | 41 | 394 | 53 | 33 | 124 | 41 | 58 | 164 | 50 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 24 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 0 | 0 | 481 | 0 | 0 | 174 | 0 | 0 | 243 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 864 | | | 844 | | | 1100 | | | 1078 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.26 | | | 0.07 | | | 0.09 | |
| v/c Ratio | | 0.56 | | | 0.57 | | | 0.16 | | | 0.23 | |
| Uniform Delay, d1 | | 12.7 | | | 12.8 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.55 | | | 0.40 | | | 1.34 | | | 0.45 | |
| Incremental Delay, d2 | | 2.1 | | | 2.5 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 9.2 | | | 7.7 | | | 16.2 | | | 5.9 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 9.2 | | | 7.7 | | | 16.2 | | | 5.9 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 9.0 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.41 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 71.5% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 320 | 49 | 78 | 445 | 82 | 46 | 217 | 97 | 79 | 215 | 62 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3034 | | 1572 | 3077 | | 1587 | 2962 | | 1585 | 3070 | |
| Flt Permitted | 0.34 | 1.00 | | 0.47 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 534 | 3034 | | 775 | 3077 | | 943 | 2962 | | 905 | 3070 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 356 | 54 | 87 | 494 | 91 | 51 | 241 | 108 | 88 | 239 | 69 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 23 | 0 | 0 | 50 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 57 | 391 | 0 | 87 | 562 | 0 | 51 | 299 | 0 | 88 | 276 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 181 | 1027 | | 262 | 1041 | | 508 | 1595 | | 487 | 1653 | |
| v/s Ratio Prot | | 0.13 | | | c0.18 | | | c0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.11 | | | 0.05 | | | 0.10 | | |
| v/c Ratio | 0.31 | 0.38 | | 0.33 | 0.54 | | 0.10 | 0.19 | | 0.18 | 0.17 | |
| Uniform Delay, d1 | 15.9 | 16.3 | | 16.0 | 17.4 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.66 | 0.63 | | 0.94 | 0.94 | | 0.72 | 0.62 | | 1.10 | 1.11 | |
| Incremental Delay, d2 | 4.0 | 0.9 | | 3.3 | 2.0 | | 0.4 | 0.3 | | 0.8 | 0.2 | |
| Delay (s) | 14.5 | 11.2 | | 18.4 | 18.3 | | 5.6 | 5.0 | | 9.2 | 8.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 11.6 | | | 18.3 | | | 5.1 | | | 8.8 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.32 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 50.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 338 | 78 | 83 | 395 | 48 | 45 | 226 | 57 | 46 | 279 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1508 | 3016 | | 1430 | 3722 | | | 3485 | | | 3519 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 734 | 3016 | | 725 | 3722 | | | 3031 | | | 3121 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 356 | 82 | 87 | 416 | 51 | 47 | 238 | 60 | 48 | 294 | 68 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 15 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 408 | 0 | 87 | 452 | 0 | 0 | 318 | 0 | 0 | 385 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 350 | 1438 | | 346 | 1775 | | | 1212 | | | 1248 | |
| v/s Ratio Prot | | c0.14 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.12 | | | | 0.10 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.28 | | 0.25 | 0.25 | | | 0.26 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.1 | 10.1 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.60 | 1.75 | | 1.12 | 1.11 | | | 0.44 | | | 0.73 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.6 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.6 | 18.5 | | 12.9 | 11.6 | | | 6.3 | | | 10.3 | |
| Level of Service | B | B | | B | B | | | A | | | B | |
| Approach Delay (s) | | 18.2 | | | 11.8 | | | 6.3 | | | 10.3 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 58.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  |  |
| Volume (vph) | 86 | 284 | 91 | 88 | 276 | 88 | 116 | 79 | 45 | 45 | 79 | 115 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3086 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.80 | | | 0.68 | | | 0.91 | |
| Satd. Flow (perm) | | 1342 | 1436 | | 2487 | | | 1319 | | | 1679 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 316 | 101 | 98 | 307 | 98 | 129 | 88 | 50 | 50 | 88 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 48 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 412 | 53 | 0 | 471 | 0 | 0 | 254 | 0 | 0 | 215 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 702 | 751 | | 1301 | | | 426 | | | 542 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | 0.04 | | 0.19 | | | c0.19 | | | 0.13 | |
| v/c Ratio | | 0.59 | 0.07 | | 0.36 | | | 0.60 | | | 0.40 | |
| Uniform Delay, d1 | | 10.7 | 7.7 | | 9.1 | | | 18.4 | | | 17.1 | |
| Progression Factor | | 1.82 | 4.59 | | 0.53 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.5 | 0.2 | | 0.8 | | | 6.0 | | | 2.2 | |
| Delay (s) | | 22.9 | 35.4 | | 5.6 | | | 24.5 | | | 19.2 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 25.4 | | | 5.6 | | | 24.5 | | | 19.2 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 77.6% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 271 | 28 | 25 | 311 | 58 | 26 | 130 | 46 | 62 | 145 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3025 | | 1565 | 3019 | | | 3581 | | | 3598 | |
| Flt Permitted | 0.50 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 757 | 3025 | | 909 | 3019 | | | 3234 | | | 3071 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 301 | 31 | 28 | 346 | 64 | 29 | 144 | 51 | 69 | 161 | 70 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 23 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 320 | 0 | 28 | 387 | 0 | 0 | 194 | 0 | 0 | 259 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 1396 | | 420 | 1393 | | | 1343 | | | 1276 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.17 | 0.23 | | 0.07 | 0.28 | | | 0.14 | | | 0.20 | |
| Uniform Delay, d1 | 10.2 | 10.5 | | 9.7 | 10.8 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.68 | 0.68 | | 0.81 | 0.64 | | | 1.03 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.2 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 7.8 | 7.5 | | 8.0 | 7.2 | | | 12.3 | | | 5.2 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.5 | | | 7.3 | | | 12.3 | | | 5.2 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.7 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.24 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 440 | 26 | 83 | 483 | 213 | 23 | 118 | 109 | 323 | 248 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3280 | | | 3167 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.78 | | | 0.80 | | | 0.91 | | | 0.71 | |
| Satd. Flow (perm) | | 2557 | | | 2553 | | | 2816 | | | 2306 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 489 | 29 | 92 | 537 | 237 | 26 | 131 | 121 | 359 | 276 | 87 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 60 | 0 | 0 | 65 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 0 | 0 | 806 | 0 | 0 | 213 | 0 | 0 | 706 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 983 | | | 982 | | | 1342 | | | 603 | |
| v/s Ratio Prot | | | | | | | | c0.02 | | | | |
| v/s Ratio Perm | | 0.22 | | | c0.32 | | | 0.05 | | | c0.31 | |
| v/c Ratio | | 0.57 | | | 0.82 | | | 0.16 | | | 1.27dl | |
| Uniform Delay, d1 | | 15.8 | | | 18.0 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.48 | | | 1.00 | | | 1.00 | | | 0.81 | |
| Incremental Delay, d2 | | 2.4 | | | 7.7 | | | 0.3 | | | 93.0 | |
| Delay (s) | | 25.8 | | | 25.7 | | | 10.4 | | | 112.4 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 25.8 | | | 25.7 | | | 10.4 | | | 112.4 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 49.7 | | | HCM Level of Service | | | D | | | | |
| HCM Volume to Capacity ratio | | 0.84 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 83.3% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 871 | 125 | 46 | 760 | 0 | 78 | 0 | 35 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.81 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2510 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 968 | 139 | 51 | 844 | 0 | 87 | 0 | 39 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1092 | 0 | 0 | 895 | 0 | 0 | 108 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 920 | | | 236 | | | | | |
| v/s Ratio Prot | c0.36 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.36 | | | c0.08 | | | | | |
| v/c Ratio | 0.56 | | | 0.97 | | | 0.46 | | | | | |
| Uniform Delay, d1 | 8.9 | | | 28.1 | | | 33.1 | | | | | |
| Progression Factor | 0.11 | | | 1.41 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 22.8 | | | 6.3 | | | | | |
| Delay (s) | 1.4 | | | 62.4 | | | 39.4 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.4 | | | 62.4 | | | 39.4 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 29.3 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.74 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 72.5% | | | ICU Level of Service | | | C | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 216 | 633 | 22 | 108 | 586 | 178 | 58 | 4 | 103 | 205 | 10 | 205 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.31 | 1.00 | | 0.34 | 1.00 | 1.00 | | 0.88 | | 0.44 | 1.00 | 1.00 |
| Satd. Flow (perm) | 504 | 3194 | | 597 | 3320 | 1485 | | 1594 | | 761 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 240 | 703 | 24 | 120 | 651 | 198 | 64 | 4 | 114 | 228 | 11 | 228 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 90 | 0 | 92 | 0 | 0 | 0 | 132 |
| Lane Group Flow (vph) | 240 | 725 | 0 | 120 | 651 | 108 | 0 | 90 | 0 | 228 | 11 | 96 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.5 | 43.3 | | 48.4 | 39.2 | 49.2 | | 11.5 | | 24.5 | 24.5 | 37.8 |
| Effective Green, g (s) | 55.5 | 43.3 | | 48.4 | 39.2 | 49.2 | | 11.5 | | 24.5 | 24.5 | 37.8 |
| Actuated g/C Ratio | 0.62 | 0.48 | | 0.54 | 0.44 | 0.55 | | 0.13 | | 0.27 | 0.27 | 0.42 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 465 | 1537 | | 430 | 1446 | 812 | | 204 | | 307 | 476 | 624 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.20 | 0.01 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.24 | | | 0.12 | | 0.06 | | 0.06 | | c0.12 | | 0.04 |
| v/c Ratio | 0.52 | 0.47 | | 0.28 | 0.45 | 0.13 | | 0.44 | | 0.74 | 0.02 | 0.15 |
| Uniform Delay, d1 | 8.7 | 15.7 | | 10.4 | 17.8 | 10.0 | | 36.3 | | 28.6 | 24.0 | 16.2 |
| Progression Factor | 2.62 | 1.90 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.1 | 0.9 | | 0.5 | 1.0 | 0.1 | | 2.1 | | 9.3 | 0.0 | 0.2 |
| Delay (s) | 23.9 | 30.7 | | 10.9 | 18.8 | 10.0 | | 38.3 | | 38.0 | 24.0 | 16.3 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 29.0 | | | 16.1 | | | 38.3 | | | 27.1 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.5 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 0.55 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 90.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 60.1% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 511 | 431 | 2 | 323 | 0 | 0 | 0 | 0 | 18 | 0 | 548 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 568 | 479 | 2 | 359 | 0 | 0 | 0 | 0 | 20 | 0 | 609 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 359 | | | 568 | | | 752 | 931 | 284 | 647 | 931 | 179 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 27 |
| cM capacity (veh/h) | 1189 | | | 994 | | | 79 | 263 | 710 | 353 | 263 | 829 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 284 | 284 | 479 | 122 | 239 | 20 | 609 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 20 | 0 | | | | | |
| Volume Right | 0 | 0 | 479 | 0 | 0 | 0 | 609 | | | | | |
| cSH | 1700 | 1700 | 1700 | 994 | 1700 | 353 | 829 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.28 | 0.00 | 0.14 | 0.06 | 0.73 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 4 | 167 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 15.8 | 20.3 | | | | | |
| Lane LOS | | | | A | | C | C | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 20.2 | | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 52.0% | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 529 | 0 | 325 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 588 | 0 | 361 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 294 | 294 | 361 | | | |
| Volume Left (vph) | 294 | 294 | 361 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.1 | 6.1 | 5.6 | | | |
| Degree Utilization, x | 0.50 | 0.50 | 0.56 | | | |
| Capacity (veh/h) | 571 | 573 | 620 | | | |
| Control Delay (s) | 13.9 | 13.9 | 15.3 | | | |
| Approach Delay (s) | 13.9 | | 15.3 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.5 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 41.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 472 | 90 | 188 | 584 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3133 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.33 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3133 | | 559 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 524 | 100 | 209 | 649 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 606 | 0 | 209 | 649 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1327 | | 445 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.20 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.22 | | | | | | | | |
| v/c Ratio | | 0.46 | | 0.47 | 0.35 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.5 | | 16.2 | 9.6 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.50 | 0.42 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.0 | 0.4 | | | | | | 0.3 | |
| Delay (s) | | 18.6 | | 11.0 | 4.5 | | | | | | 21.2 | |
| Level of Service | | B | | B | A | | | | | | C | |
| Approach Delay (s) | | 18.6 | | | 6.1 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 45.9% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 609 | 124 | 163 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3128 | | | 4520 | | | | |
| Flt Permitted | 0.23 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | 401 | 3320 | | | 3128 | | | 4520 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 531 | 0 | 0 | 677 | 138 | 181 | 100 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 44 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 531 | 0 | 0 | 795 | 0 | 0 | 301 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 375 | 1875 | | | 1288 | | | 1436 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.25 | | | c0.07 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.28 | 0.28 | | | 0.62 | | | 0.21 | | | | |
| Uniform Delay, d1 | 17.6 | 9.6 | | | 19.7 | | | 21.2 | | | | |
| Progression Factor | 0.40 | 0.33 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.7 | 0.4 | | | 2.2 | | | 0.3 | | | | |
| Delay (s) | 8.7 | 3.5 | | | 21.9 | | | 21.5 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 21.9 | | | 21.5 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.6 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.9% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 342 | 126 | 79 | 366 | 79 | 178 | 78 | 27 | 29 | 85 | 141 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.99 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2969 | | | 3006 | | | 1840 | | | 1768 | |
| Flt Permitted | | 0.68 | | | 0.72 | | | 0.66 | | | 0.94 | |
| Satd. Flow (perm) | | 2025 | | | 2179 | | | 1251 | | | 1677 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 380 | 140 | 88 | 407 | 88 | 198 | 87 | 30 | 32 | 94 | 157 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 22 | 0 | 0 | 6 | 0 | 0 | 69 | 0 |
| Lane Group Flow (vph) | 0 | 608 | 0 | 0 | 561 | 0 | 0 | 309 | 0 | 0 | 214 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 717 | | | 771 | | | 616 | | | 826 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.26 | | | c0.25 | | | 0.13 | |
| v/c Ratio | | 0.85 | | | 0.73 | | | 0.50 | | | 0.26 | |
| Uniform Delay, d1 | | 19.4 | | | 18.3 | | | 11.1 | | | 9.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 11.9 | | | 5.9 | | | 2.9 | | | 0.8 | |
| Delay (s) | | 31.3 | | | 24.2 | | | 14.0 | | | 10.4 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 31.3 | | | 24.2 | | | 14.0 | | | 10.4 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 22.8 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 82.2% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street

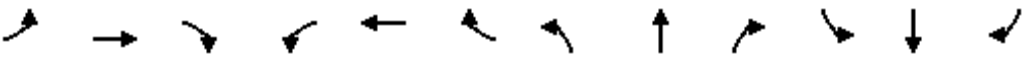
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 201 | 100 | 203 | 311 | 65 | 168 | 561 | 243 | 91 | 911 | 140 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2967 | | 1574 | 3683 | | 1508 | 3069 | 1333 | 1521 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.52 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.32 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2967 | | 862 | 3683 | | 212 | 3069 | 1333 | 520 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 105 | 214 | 327 | 68 | 177 | 591 | 256 | 96 | 959 | 147 |
| RTOR Reduction (vph) | 0 | 70 | 0 | 0 | 21 | 0 | 0 | 0 | 163 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 214 | 374 | 0 | 177 | 591 | 93 | 96 | 959 | 54 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 977 | | 338 | 1213 | | 181 | 1119 | 486 | 291 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.10 | | c0.07 | 0.19 | | 0.02 | 0.31 | |
| v/s Ratio Perm | 0.11 | | | c0.19 | | | c0.35 | | 0.07 | 0.12 | | 0.04 |
| v/c Ratio | 0.37 | 0.25 | | 0.63 | 0.31 | | 0.98 | 0.53 | 0.19 | 0.33 | 0.85 | 0.11 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 22.2 | 21.3 | | 19.9 | 21.2 | 18.4 | 15.4 | 24.8 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.42 | 1.06 | 2.39 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 8.7 | 0.7 | | 61.4 | 1.8 | 0.9 | 2.2 | 6.0 | 0.3 |
| Delay (s) | 23.0 | 21.5 | | 30.9 | 21.9 | | 81.3 | 23.0 | 19.3 | 24.2 | 32.2 | 43.0 |
| Level of Service | C | C | | C | C | | F | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 25.1 | | | 32.2 | | | 32.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.8 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 74.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue

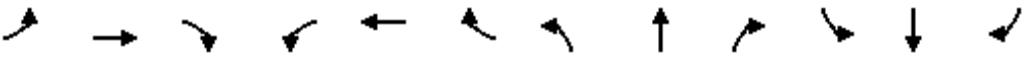








1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ |
| Volume (vph) | 97 | 424 | 30 | 33 | 421 | 24 | 31 | 95 | 39 | 36 | 122 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1957 | 1466 | | 1994 | 1480 | | 2015 | 1506 | | 2000 | 1511 |
| Flt Permitted | | 0.73 | 1.00 | | 0.94 | 1.00 | | 0.92 | 1.00 | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1435 | 1466 | | 1888 | 1480 | | 1869 | 1506 | | 1870 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 102 | 446 | 32 | 35 | 443 | 25 | 33 | 100 | 41 | 38 | 128 | 79 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 24 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 0 | 548 | 15 | 0 | 478 | 12 | 0 | 133 | 17 | 0 | 166 | 33 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 662 | 677 | | 871 | 683 | | 776 | 626 | | 777 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.38 | 0.01 | | 0.25 | 0.01 | | 0.07 | 0.01 | | c0.09 | 0.02 |
| v/c Ratio | | 0.83 | 0.02 | | 0.55 | 0.02 | | 0.17 | 0.03 | | 0.21 | 0.05 |
| Uniform Delay, d1 | | 15.2 | 9.5 | | 12.6 | 9.5 | | 12.0 | 11.2 | | 12.2 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.62 | 0.55 | | 0.92 | 1.00 | | 1.03 | 0.93 |
| Incremental Delay, d2 | | 11.4 | 0.1 | | 2.4 | 0.0 | | 0.4 | 0.1 | | 0.6 | 0.2 |
| Delay (s) | | 26.6 | 9.6 | | 10.2 | 5.2 | | 11.4 | 11.3 | | 13.1 | 10.7 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 25.7 | | | 10.0 | | | 11.4 | | | 12.3 | |
| Approach LOS | | C | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.54 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 94.5% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 115 | 394 | 20 | 41 | 269 | 31 | 10 | 107 | 21 | 104 | 203 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3077 | | 1550 | 3052 | | 1550 | 3024 | | 1550 | 2977 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.55 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3077 | | 795 | 3052 | | 897 | 3024 | | 1080 | 2977 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 128 | 438 | 22 | 46 | 299 | 34 | 11 | 119 | 23 | 116 | 226 | 80 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 47 | 0 |
| Lane Group Flow (vph) | 128 | 454 | 0 | 46 | 320 | 0 | 11 | 129 | 0 | 116 | 259 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1515 | | 269 | 1033 | | 373 | 1256 | | 449 | 1237 | |
| v/s Ratio Prot | c0.08 | c0.15 | | | 0.10 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.06 | | | 0.01 | | | c0.11 | | |
| v/c Ratio | 0.77 | 0.30 | | 0.17 | 0.31 | | 0.03 | 0.10 | | 0.26 | 0.21 | |
| Uniform Delay, d1 | 28.2 | 9.8 | | 15.1 | 15.9 | | 11.2 | 11.6 | | 12.4 | 12.2 | |
| Progression Factor | 1.17 | 0.39 | | 0.75 | 0.73 | | 1.05 | 1.15 | | 1.13 | 1.14 | |
| Incremental Delay, d2 | 22.2 | 0.4 | | 1.3 | 0.7 | | 0.1 | 0.1 | | 1.4 | 0.4 | |
| Delay (s) | 55.1 | 4.2 | | 12.7 | 12.4 | | 12.0 | 13.5 | | 15.4 | 14.3 | |
| Level of Service | E | A | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 15.3 | | | 12.4 | | | 13.4 | | | 14.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 40.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 83 | 332 | 68 | 197 | 337 | 61 | 25 | 245 | 20 | 55 | 270 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3020 | | 1550 | 3028 | | | 3272 | | | 3225 | |
| Flt Permitted | 0.50 | 1.00 | | 0.95 | 1.00 | | | 0.90 | | | 0.86 | |
| Satd. Flow (perm) | 809 | 3020 | | 1550 | 3028 | | | 2966 | | | 2803 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 92 | 369 | 76 | 219 | 374 | 68 | 28 | 272 | 22 | 61 | 300 | 61 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 23 | 0 | 0 | 8 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 92 | 419 | 0 | 219 | 419 | 0 | 0 | 314 | 0 | 0 | 401 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 249 | 929 | | 143 | 1351 | | | 1141 | | | 1078 | |
| v/s Ratio Prot | c0.14 | | | c0.14 | | | 0.14 | | | | | |
| v/s Ratio Perm | 0.11 | | | | | | 0.11 | | | c0.14 | | |
| v/c Ratio | 0.37 | 0.45 | | 1.53 | 0.31 | | | 0.28 | | | 0.37 | |
| Uniform Delay, d1 | 17.6 | 18.1 | | 29.5 | 11.6 | | | 13.8 | | | 14.4 | |
| Progression Factor | 0.86 | 0.80 | | 1.28 | 1.15 | | | 0.87 | | | 0.71 | |
| Incremental Delay, d2 | 4.1 | 1.5 | | 257.2 | 0.3 | | | 0.6 | | | 1.0 | |
| Delay (s) | 19.1 | 16.0 | | 294.9 | 13.6 | | | 12.6 | | | 11.2 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 16.5 | | | 106.8 | | | 12.6 | | | 11.2 | | |
| Approach LOS | B | | | F | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 45.4 | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 56.8% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 355 | 26 | 73 | 602 | 73 | 54 | 108 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1613 | | | 1602 | | | 3249 | | | | |
| Flt Permitted | | 0.96 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1558 | | | 1484 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 394 | 29 | 81 | 669 | 81 | 60 | 120 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 137 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 438 | 0 | 0 | 826 | 0 | 0 | 223 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 995 | | | 947 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.28 | | | 0.56 | | | 0.07 | | | | |
| v/c Ratio | | 0.44 | | | 0.87 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 5.9 | | | 9.6 | | | 20.2 | | | | |
| Progression Factor | | 2.02 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.3 | | | 10.9 | | | 0.9 | | | | |
| Delay (s) | | 13.2 | | | 20.5 | | | 21.1 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 13.2 | | | 20.5 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 85.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

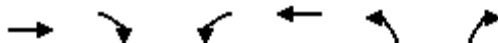


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 93 | 414 | 579 | 38 | 117 | 162 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 98 | 436 | 609 | 40 | 123 | 171 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.84 | | | | 0.84 | 0.84 |
| vC, conflicting volume | 666 | | | | 1284 | 651 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 504 | | | | 1242 | 486 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 89 | | | | 13 | 65 |
| cM capacity (veh/h) | 864 | | | | 142 | 481 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 534 | 649 | 123 | 171 | | |
| Volume Left | 98 | 0 | 123 | 0 | | |
| Volume Right | 0 | 40 | 0 | 171 | | |
| cSH | 864 | 1700 | 142 | 481 | | |
| Volume to Capacity | 0.11 | 0.38 | 0.87 | 0.35 | | |
| Queue Length 95th (ft) | 10 | 0 | 143 | 40 | | |
| Control Delay (s) | 3.0 | 0.0 | 104.6 | 16.5 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 3.0 | 0.0 | 53.4 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 11.7 | | | |
| Intersection Capacity Utilization | | | 81.0% | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 684 | 0 | 1 | 600 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 760 | 0 | 1 | 667 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 760 | 0 | 0 | 668 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.43 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.38 | | |
| v/c Ratio | 0.63 | | | 1.05 | 0.03 | |
| Uniform Delay, d1 | 7.0 | | | 27.0 | 29.8 | |
| Progression Factor | 0.10 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.1 | | | 49.1 | 0.2 | |
| Delay (s) | 1.8 | | | 76.1 | 30.1 | |
| Level of Service | A | | | E | C | |
| Approach Delay (s) | 1.8 | | | 76.1 | 30.1 | |
| Approach LOS | A | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 36.4 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.68 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013




| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 236 | 594 | 30 | 386 | 0 | 0 | 0 | 0 | 17 | 6 | 242 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 262 | 660 | 33 | 429 | 0 | 0 | 0 | 0 | 19 | 7 | 269 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 429 | | | 262 | | | 1091 | 1088 | 461 | 627 | 758 | 429 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 429 | | | 262 | | | 1091 | 1088 | 461 | 627 | 758 | 429 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 53 |
| cM capacity (veh/h) | 1141 | | | 1285 | | | 88 | 212 | 553 | 365 | 330 | 574 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 175 | 747 | 462 | 26 | 269 | | | | | | | |
| Volume Left | 0 | 0 | 33 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 660 | 0 | 0 | 269 | | | | | | | |
| cSH | 1700 | 1700 | 1285 | 355 | 574 | | | | | | | |
| Volume to Capacity | 0.10 | 0.44 | 0.03 | 0.07 | 0.47 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 62 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.8 | 15.9 | 16.7 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.8 | 16.6 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |   | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 253 | 0 | 417 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 281 | 0 | 463 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 141 | 141 | 463 | | | |
| Volume Left (vph) | 141 | 141 | 463 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.3 | 6.3 | 5.0 | | | |
| Degree Utilization, x | 0.25 | 0.25 | 0.64 | | | |
| Capacity (veh/h) | 543 | 544 | 702 | | | |
| Control Delay (s) | 10.1 | 10.1 | 16.3 | | | |
| Approach Delay (s) | 10.1 | | 16.3 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 38.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|----------|----------|----------------------|------|------|------|-------|-------|--------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 545 | 337 | 322 | 845 | 0 | 0 | 0 | 0 | 305 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 574 | 355 | 339 | 889 | 0 | 0 | 0 | 0 | 321 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 113 |
| Lane Group Flow (vph) | 0 | 574 | 149 | 0 | 1228 | 0 | 0 | 0 | 0 | 177 | 571 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.42 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1444 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.18 | | | c0.36 | | | | | 0.13 | c0.15 | |
| v/s Ratio Perm | | | 0.12 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.74 | 0.50 | | 0.85 | | | | | 0.91 | 1.04 | 0.17 |
| Uniform Delay, d1 | | 55.8 | 52.0 | | 41.8 | | | | | 67.5 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.16 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 6.3 | 5.7 | | 0.5 | | | | | 39.2 | 50.3 | 0.2 |
| Delay (s) | | 62.1 | 57.8 | | 7.1 | | | | | 106.7 | 118.8 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 60.5 | | | 7.1 | | | 0.0 | | | 98.9 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.6 | | |
| Intersection Capacity Utilization | | | 83.4% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 290 | 561 | 0 | 0 | 854 | 231 | 313 | 204 | 202 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3055 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3055 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 322 | 623 | 0 | 0 | 949 | 257 | 348 | 227 | 224 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 77 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 322 | 623 | 0 | 0 | 949 | 163 | 271 | 451 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | | Perm | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | 10 | | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 84.6 | 84.6 | | | | 36.4 | 36.4 | 12.0 | 12.0 | | | |
| Effective Green, g (s) | 84.6 | 84.6 | | | | 36.4 | 36.4 | 12.0 | 12.0 | | | |
| Actuated g/C Ratio | 0.53 | 0.53 | | | | 0.23 | 0.23 | 0.08 | 0.08 | | | |
| Clearance Time (s) | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | |
| Vehicle Extension (s) | | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 849 | 1814 | | 730 | | | 338 | 117 | 229 | | | |
| v/s Ratio Prot | c0.20 | 0.18 | | c0.30 | | | | c0.17 | 0.15 | | | |
| v/s Ratio Perm | | | | | | 0.11 | | | | | | |
| v/c Ratio | 0.38 | 0.34 | | | | 1.30 | 0.48 | 2.32 | 1.97 | | | |
| Uniform Delay, d1 | 22.2 | 21.7 | | | | 61.8 | 53.6 | 74.0 | 74.0 | | | |
| Progression Factor | 0.06 | 0.06 | | | | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | | 145.0 | 1.1 | 618.2 | 452.1 | | | |
| Delay (s) | 1.4 | 1.3 | | | | 206.8 | 54.7 | 692.2 | 526.1 | | | |
| Level of Service | A | A | | | | F | D | F | F | | | |
| Approach Delay (s) | 1.3 | | 174.3 | | | 582.5 | | | | 0.0 | | |
| Approach LOS | A | | F | | | F | | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 229.5 | | | HCM Level of Service | | | | | F | | | |
| HCM Volume to Capacity ratio | 0.82 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | Sum of lost time (s) | | | | | 29.0 | | | |
| Intersection Capacity Utilization | 71.8% | | | ICU Level of Service | | | | | C | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 138 | 502 | 134 | 87 | 266 | 66 | 104 | 504 | 68 | 96 | 1150 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1575 | 1600 | 1373 | 1596 | 1791 | | 1579 | 3015 | | 1537 | 3027 | |
| Flt Permitted | 0.33 | 1.00 | 1.00 | 0.15 | 1.00 | | 0.12 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 549 | 1600 | 1373 | 251 | 1791 | | 201 | 3015 | | 523 | 3027 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 145 | 528 | 141 | 92 | 280 | 69 | 109 | 531 | 72 | 101 | 1211 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 95 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 145 | 528 | 46 | 92 | 339 | 0 | 109 | 591 | 0 | 101 | 1328 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.3 | 29.3 | 29.3 | 33.3 | 27.8 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 34.3 | 30.3 | 29.3 | 31.3 | 27.8 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.38 | 0.34 | 0.33 | 0.35 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 279 | 542 | 450 | 156 | 557 | | 154 | 1150 | | 271 | 1155 | |
| v/s Ratio Prot | c0.03 | c0.33 | | 0.03 | 0.19 | | c0.04 | 0.20 | | 0.02 | c0.44 | |
| v/s Ratio Perm | 0.16 | | 0.03 | 0.18 | | | 0.26 | | | 0.14 | | |
| v/c Ratio | 0.52 | 0.97 | 0.10 | 0.59 | 0.61 | | 0.71 | 0.51 | | 0.37 | 1.15 | |
| Uniform Delay, d1 | 19.6 | 29.2 | 20.9 | 22.3 | 26.2 | | 21.2 | 21.3 | | 16.5 | 27.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 32.8 | 0.5 | 5.6 | 4.9 | | 13.8 | 1.6 | | 0.9 | 77.9 | |
| Delay (s) | 21.2 | 61.9 | 21.4 | 27.9 | 31.1 | | 35.0 | 22.9 | | 17.3 | 105.5 | |
| Level of Service | C | E | C | C | C | | D | C | | B | F | |
| Approach Delay (s) | | 47.7 | | | 30.4 | | | 24.8 | | | 99.3 | |
| Approach LOS | | D | | | C | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.5 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.97 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.4 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.1% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 87 | 454 | 109 | 13 | 324 | 21 | 48 | 57 | 19 | 20 | 88 | 79 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1963 | 1467 | | 1629 | 1381 | | 1890 | | | 1857 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.98 | 1.00 | | 0.86 | | | 0.97 | |
| Satd. Flow (perm) | | 1764 | 1467 | | 1597 | 1381 | | 1653 | | | 1815 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 92 | 478 | 115 | 14 | 341 | 22 | 51 | 60 | 20 | 21 | 93 | 83 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 11 | 0 | 10 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 0 | 570 | 70 | 0 | 355 | 11 | 0 | 121 | 0 | 0 | 157 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 868 | 722 | | 786 | 680 | | 687 | | | 754 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | 0.05 | | 0.22 | 0.01 | | 0.07 | | | c0.09 | |
| v/c Ratio | | 0.66 | 0.10 | | 0.45 | 0.02 | | 0.18 | | | 0.21 | |
| Uniform Delay, d1 | | 12.4 | 8.8 | | 10.8 | 8.4 | | 12.0 | | | 12.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.85 | 2.62 | | 1.00 | | | 1.99 | |
| Incremental Delay, d2 | | 3.9 | 0.3 | | 1.8 | 0.0 | | 0.6 | | | 0.6 | |
| Delay (s) | | 16.2 | 9.1 | | 21.7 | 22.2 | | 12.5 | | | 24.8 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 15.0 | | | 21.8 | | | 12.5 | | | 24.8 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.0 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 77.4% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | | ↔ | |
| Volume (vph) | 107 | 239 | 90 | 11 | 218 | 10 | 46 | 108 | 18 | 14 | 175 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1742 | 1443 | | 1728 | 1487 | | 1712 | 1489 | | 1703 | |
| Flt Permitted | | 0.80 | 1.00 | | 0.98 | 1.00 | | 0.86 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1411 | 1443 | | 1691 | 1487 | | 1494 | 1489 | | 1681 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 113 | 252 | 95 | 12 | 229 | 11 | 48 | 114 | 19 | 15 | 184 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 58 | 0 | 0 | 7 | 0 | 0 | 10 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 365 | 37 | 0 | 241 | 4 | 0 | 162 | 9 | 0 | 258 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 499 | 511 | | 598 | 526 | | 736 | 733 | | 828 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.26 | 0.03 | | 0.14 | 0.00 | | 0.11 | 0.01 | | c0.15 | |
| v/c Ratio | | 0.73 | 0.07 | | 0.40 | 0.01 | | 0.22 | 0.01 | | 0.31 | |
| Uniform Delay, d1 | | 18.3 | 13.9 | | 15.8 | 13.6 | | 9.4 | 8.4 | | 9.9 | |
| Progression Factor | | 1.80 | 3.68 | | 0.96 | 0.98 | | 0.16 | 0.20 | | 1.07 | |
| Incremental Delay, d2 | | 7.3 | 0.2 | | 2.0 | 0.0 | | 0.1 | 0.0 | | 1.0 | |
| Delay (s) | | 40.2 | 51.5 | | 17.1 | 13.3 | | 1.6 | 1.7 | | 11.6 | |
| Level of Service | | D | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 42.5 | | | 17.0 | | | 1.6 | | | 11.6 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 23.3 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 70.8% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 167 | 45 | 96 | 8 | 16 | 9 | 43 | 224 | 8 | 20 | 458 | 199 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.99 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1873 | 1440 | | 1782 | | | 1991 | | | 1976 | 1382 |
| Flt Permitted | | 0.81 | 1.00 | | 0.93 | | | 0.89 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1573 | 1440 | | 1686 | | | 1780 | | | 1947 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 186 | 50 | 107 | 9 | 18 | 10 | 48 | 249 | 9 | 22 | 509 | 221 |
| RTOR Reduction (vph) | 0 | 0 | 63 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 92 |
| Lane Group Flow (vph) | 0 | 236 | 44 | 0 | 30 | 0 | 0 | 304 | 0 | 0 | 531 | 129 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 690 | 598 | | 441 | | | 876 | | | 959 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.10 | 0.03 | | 0.02 | | | 0.17 | | | c0.27 | 0.09 |
| v/c Ratio | | 0.34 | 0.07 | | 0.07 | | | 0.35 | | | 0.55 | 0.19 |
| Uniform Delay, d1 | | 12.9 | 11.5 | | 18.0 | | | 10.1 | | | 11.5 | 9.2 |
| Progression Factor | | 1.00 | 1.79 | | 1.00 | | | 0.53 | | | 0.64 | 0.22 |
| Incremental Delay, d2 | | 1.1 | 0.2 | | 0.3 | | | 0.7 | | | 1.8 | 0.5 |
| Delay (s) | | 14.0 | 20.7 | | 18.3 | | | 6.0 | | | 9.1 | 2.5 |
| Level of Service | | B | C | | B | | | A | | | A | A |
| Approach Delay (s) | | 16.1 | | | 18.3 | | | 6.0 | | | 7.1 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.3 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.44 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 71.1% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 922 | 289 | 666 | 1163 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4575 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.10 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4575 | | 173 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 971 | 304 | 701 | 1224 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 62 |
| Lane Group Flow (vph) | 0 | 1226 | 0 | 701 | 1224 | 0 | 0 | 0 | 0 | 308 | 603 | 209 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 35.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 35.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.30 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1392 | | 558 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.27 | | 0.39 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | 0.43 | | | | | | 0.21 | 0.21 | 0.14 |
| v/c Ratio | | 0.88 | | 1.26 | 0.57 | | | | | 0.85 | 0.85 | 0.59 |
| Uniform Delay, d1 | | 38.0 | | 33.0 | 11.1 | | | | | 41.4 | 41.4 | 38.4 |
| Progression Factor | | 1.00 | | 0.86 | 2.10 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 8.3 | | 119.4 | 0.3 | | | | | 16.7 | 9.4 | 2.8 |
| Delay (s) | | 46.3 | | 147.7 | 23.6 | | | | | 58.1 | 50.8 | 41.2 |
| Level of Service | | D | | F | C | | | | | E | D | D |
| Approach Delay (s) | | 46.3 | | | 68.8 | | | 0.0 | | | 50.5 | |
| Approach LOS | | D | | | E | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 57.3 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 1.11 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 118.2% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1094 | 0 | 0 | 1423 | 269 | 406 | 333 | 377 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4490 | | | | |
| Flt Permitted | 0.07 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 220 | 3353 | | | 3241 | 1489 | | 4490 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1152 | 0 | 0 | 1498 | 283 | 427 | 351 | 397 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 68 | 0 | 75 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1152 | 0 | 0 | 1498 | 215 | 0 | 1100 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 74.0 | 74.0 | | | 54.1 | 54.1 | | 29.0 | | | | |
| Effective Green, g (s) | 74.0 | 74.0 | | | 54.1 | 54.1 | | 29.0 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.47 | 0.47 | | 0.25 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 495 | 2158 | | | 1525 | 700 | | 1132 | | | | |
| v/s Ratio Prot | c0.09 | 0.34 | | | c0.46 | | | | | | | |
| v/s Ratio Perm | 0.38 | | | | | 0.14 | | 0.25 | | | | |
| v/c Ratio | 0.73 | 0.53 | | | 0.98 | 0.31 | | 0.97 | | | | |
| Uniform Delay, d1 | 31.6 | 11.1 | | | 30.0 | 18.8 | | 42.6 | | | | |
| Progression Factor | 1.55 | 0.03 | | | 0.90 | 1.06 | | 1.00 | | | | |
| Incremental Delay, d2 | 2.6 | 0.5 | | | 3.9 | 0.1 | | 20.4 | | | | |
| Delay (s) | 51.7 | 0.7 | | | 31.0 | 20.1 | | 63.0 | | | | |
| Level of Service | D | A | | | C | C | | E | | | | |
| Approach Delay (s) | | 12.8 | | | 29.3 | | | 63.0 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.6 | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.94 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | Sum of lost time (s) | | | 18.0 | | | | |
| Intersection Capacity Utilization | | | 118.2% | | ICU Level of Service | | | H | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 132 | 760 | 399 | 102 | 1183 | 99 | 227 | 179 | 66 | 85 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1602 | 3284 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.35 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 589 | 3284 | | 654 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 139 | 800 | 420 | 107 | 1245 | 104 | 239 | 188 | 69 | 89 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 169 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 139 | 800 | 251 | 107 | 1343 | 0 | 239 | 219 | 0 | 89 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | | pm+pt | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.8 | 52.3 | 68.7 | 43.3 | 34.3 | | 38.2 | 26.4 | | 26.6 | 18.3 | |
| Effective Green, g (s) | 64.8 | 52.3 | 68.7 | 43.3 | 34.3 | | 38.2 | 26.4 | | 26.6 | 18.3 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 425 | 1489 | 784 | 301 | 979 | | 349 | 689 | | 264 | 468 | |
| v/s Ratio Prot | c0.08 | c0.24 | 0.05 | 0.03 | c0.41 | | c0.10 | 0.07 | | 0.02 | 0.07 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.11 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.54 | 0.32 | 0.36 | 1.37 | | 0.68 | 0.32 | | 0.34 | 0.41 | |
| Uniform Delay, d1 | 17.4 | 22.6 | 11.5 | 24.0 | 40.4 | | 30.5 | 36.8 | | 36.1 | 43.5 | |
| Progression Factor | 0.78 | 0.77 | 1.36 | 1.00 | 1.00 | | 1.03 | 1.05 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 1.1 | 0.2 | 0.7 | 174.0 | | 5.2 | 0.9 | | 0.8 | 2.1 | |
| Delay (s) | 15.2 | 18.4 | 15.9 | 24.7 | 214.4 | | 36.7 | 39.5 | | 36.8 | 45.5 | |
| Level of Service | B | B | B | C | F | | D | D | | D | D | |
| Approach Delay (s) | | 17.3 | | | 200.4 | | | 38.1 | | | 43.5 | |
| Approach LOS | | B | | | F | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 94.9 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 19.0 | | |
| Intersection Capacity Utilization | | | 88.3% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 250 | 367 | 182 | 430 | 107 | 362 | 340 | 107 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 2925 | | 1653 | 3269 | | 1620 | 3381 | | 1580 | 3183 | |
| Flt Permitted | 0.40 | 1.00 | | 0.18 | 1.00 | | 0.32 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 723 | 2925 | | 316 | 3269 | | 544 | 3381 | | 802 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 192 | 453 | 113 | 381 | 358 | 113 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 225 | 0 | 0 | 18 | 0 | 0 | 26 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 424 | 0 | 192 | 548 | 0 | 381 | 445 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.6 | 28.9 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 35.6 | 28.9 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.31 | 0.25 | | 0.41 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 281 | 735 | | 290 | 1026 | | 454 | 1299 | | 334 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.08 | 0.17 | | c0.15 | 0.13 | | 0.05 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | c0.19 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.17 | 0.58 | | 0.66 | 0.53 | | 0.84 | 0.34 | | 0.65 | 0.54 | |
| Uniform Delay, d1 | 28.2 | 37.7 | | 24.9 | 32.5 | | 20.8 | 25.1 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Incremental Delay, d2 | 0.3 | 3.3 | | 5.8 | 2.0 | | 13.1 | 0.7 | | 4.2 | 2.2 | |
| Delay (s) | 28.6 | 41.0 | | 30.7 | 34.5 | | 33.9 | 25.8 | | 33.0 | 36.5 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 40.1 | | | 33.5 | | | 29.4 | | | 35.5 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 82.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 101 | 578 | 287 | 10 | 376 | 66 | 718 | 349 | 9 | 188 | 594 | 174 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.96 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2965 | | | 3034 | | 1452 | 3229 | | 1523 | 2874 | |
| Flt Permitted | | 0.71 | | | 0.92 | | 0.20 | 1.00 | | 0.49 | 1.00 | |
| Satd. Flow (perm) | | 2128 | | | 2806 | | 303 | 3229 | | 781 | 2874 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 112 | 642 | 319 | 11 | 418 | 73 | 798 | 388 | 10 | 209 | 660 | 193 |
| RTOR Reduction (vph) | 0 | 72 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 1001 | 0 | 0 | 481 | 0 | 798 | 395 | 0 | 209 | 811 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 870 | | | 734 | | 201 | 1192 | | 382 | 1061 | |
| v/s Ratio Prot | | c0.07 | | | | | c0.24 | 0.12 | | 0.03 | 0.28 | |
| v/s Ratio Perm | | c0.37 | | | 0.17 | | c1.46 | | | 0.20 | | |
| v/c Ratio | | 1.15 | | | 0.65 | | 3.97 | 0.33 | | 0.55 | 0.76 | |
| Uniform Delay, d1 | | 20.0 | | | 21.4 | | 16.9 | 14.7 | | 12.8 | 18.0 | |
| Progression Factor | | 1.00 | | | 1.47 | | 0.98 | 0.87 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 81.0 | | | 0.4 | | 1337.6 | 0.1 | | 5.5 | 5.3 | |
| Delay (s) | | 101.0 | | | 31.9 | | 1354.3 | 12.9 | | 18.3 | 23.3 | |
| Level of Service | | F | | | C | | F | B | | B | C | |
| Approach Delay (s) | | 101.0 | | | 31.9 | | | 907.9 | | | 22.3 | |
| Approach LOS | | F | | | C | | | F | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 321.9 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 2.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 122.0% | | | ICU Level of Service | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 67 | 198 | 222 | 331 | 159 | 27 | 412 | 1135 | 991 | 33 | 830 | 66 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.98 | | 1.00 | 0.93 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 1840 | | 1601 | 1991 | | 1676 | 3012 | | 1437 | 3283 | |
| Flt Permitted | 0.64 | 1.00 | | 0.34 | 1.00 | | 0.23 | 1.00 | | 0.13 | 1.00 | |
| Satd. Flow (perm) | 1144 | 1840 | | 574 | 1991 | | 412 | 3012 | | 195 | 3283 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 204 | 229 | 341 | 164 | 28 | 425 | 1170 | 1022 | 34 | 856 | 68 |
| RTOR Reduction (vph) | 0 | 62 | 0 | 0 | 9 | 0 | 0 | 242 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 69 | 371 | 0 | 341 | 183 | 0 | 425 | 1950 | 0 | 34 | 915 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 422 | 679 | | 212 | 735 | | 196 | 1436 | | 93 | 1566 | |
| v/s Ratio Prot | | 0.20 | | | 0.09 | | | 0.65 | | | 0.28 | |
| v/s Ratio Perm | 0.06 | | | c0.59 | | | c1.03 | | | 0.17 | | |
| v/c Ratio | 0.16 | 0.55 | | 1.61 | 0.25 | | 2.17 | 1.36 | | 0.37 | 0.58 | |
| Uniform Delay, d1 | 13.8 | 16.2 | | 20.5 | 14.2 | | 17.0 | 17.0 | | 10.8 | 12.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.34 | 1.34 | | 1.00 | 1.00 | | 1.01 | 0.93 | |
| Incremental Delay, d2 | 0.8 | 3.1 | | 275.8 | 0.1 | | 542.3 | 165.8 | | 4.7 | 0.7 | |
| Delay (s) | 14.6 | 19.3 | | 303.3 | 19.2 | | 559.3 | 182.8 | | 15.7 | 12.2 | |
| Level of Service | B | B | | F | B | | F | F | | B | B | |
| Approach Delay (s) | | 18.7 | | | 201.0 | | | 243.9 | | | 12.3 | |
| Approach LOS | | B | | | F | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 166.3 | | | HCM Level of Service | | | F | | | | | |
| HCM Volume to Capacity ratio | 1.92 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 132.6% | | | ICU Level of Service | | | H | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 750 | 449 | 534 | 18 | 3 | 10 | 9 | 46 | 9 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.94 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3064 | | | | 1811 | | | 1824 | |
| Flt Permitted | | 0.95 | | 0.59 | | | | 0.96 | | | 0.89 | |
| Satd. Flow (perm) | | 3009 | | 1841 | | | | 1750 | | | 1672 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 789 | 473 | 562 | 19 | 3 | 11 | 9 | 48 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 791 | 0 | 1052 | 0 | 0 | 0 | 33 | 0 | 0 | 13 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | Perm | | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | 2 | | | | 6 | |
| Permitted Phases | 8 | 4 7 | | | | 2 | | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | 14.0 | | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | 14.0 | | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | 0.22 | | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | 4.0 | | | | 4.0 | |
| Lane Grp Cap (vph) | | 833 | | 878 | | | 377 | | | | 360 | |
| v/s Ratio Prot | | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | c0.39 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | | 0.95 | | 2.26dl | | | 0.09 | | | | 0.04 | |
| Uniform Delay, d1 | | 23.1 | | 19.0 | | | 20.4 | | | | 20.2 | |
| Progression Factor | | 1.40 | | 0.82 | | | 1.00 | | | | 1.00 | |
| Incremental Delay, d2 | | 7.7 | | 99.3 | | | 0.5 | | | | 0.2 | |
| Delay (s) | | 39.9 | | 115.0 | | | 20.9 | | | | 20.4 | |
| Level of Service | | D | | F | | | C | | | | C | |
| Approach Delay (s) | | 39.9 | | 115.0 | | | 20.9 | | | | 20.4 | |
| Approach LOS | | D | | F | | | C | | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 772.4 | HCM Level of Service | | F | | | | | | |
| HCM Volume to Capacity ratio | | | 1.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 14.0 | | | | | | |
| Intersection Capacity Utilization | | | 156.7% | ICU Level of Service | | H | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

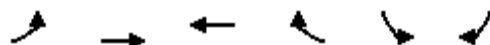


| Movement | SBR2 | NEL | NER |
|------------------------|------|--------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 1155 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1557 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1557 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 1216 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1219 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.78 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 5.08 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 1.23 | |
| Incremental Delay, d2 | | 1836.5 | |
| Delay (s) | | 1870.3 | |
| Level of Service | | F | |
| Approach Delay (s) | | 1870.3 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|------|----------------------|-------|
| Lane Configurations | | ↕↕ | ↕↕ | | ↕ | ↕ |
| Volume (vph) | 347 | 1591 | 762 | 62 | 91 | 245 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3291 | 3283 | | 1660 | 1485 |
| Flt Permitted | | 0.61 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2025 | 3283 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 386 | 1768 | 847 | 69 | 101 | 272 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 133 |
| Lane Group Flow (vph) | 0 | 2154 | 907 | 0 | 101 | 139 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1246 | 2020 | | 434 | 388 |
| v/s Ratio Prot | | | 0.28 | | 0.06 | |
| v/s Ratio Perm | | c1.06 | | | | c0.09 |
| v/c Ratio | | 1.73 | 0.45 | | 0.23 | 0.36 |
| Uniform Delay, d1 | | 12.5 | 6.6 | | 18.9 | 19.6 |
| Progression Factor | | 2.00 | 0.97 | | 1.26 | 1.58 |
| Incremental Delay, d2 | | 328.2 | 0.6 | | 1.2 | 2.5 |
| Delay (s) | | 353.2 | 7.1 | | 25.0 | 33.4 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 353.2 | 7.1 | | 31.2 | |
| Approach LOS | | F | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 226.2 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 1.32 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 96.7% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|--------|------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 102 | 1583 | 734 | 148 | 259 | 92 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3122 | 3107 | | 1506 | 1343 |
| Flt Permitted | | 0.78 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2429 | 3107 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 107 | 1666 | 773 | 156 | 273 | 97 |
| RTOR Reduction (vph) | 0 | 0 | 26 | 0 | 0 | 63 |
| Lane Group Flow (vph) | 0 | 1773 | 903 | 0 | 273 | 34 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1271 | 1625 | | 533 | 475 |
| v/s Ratio Prot | | | 0.29 | | c0.18 | |
| v/s Ratio Perm | | c0.73 | | | | 0.03 |
| v/c Ratio | | 1.39 | 0.56 | | 0.51 | 0.07 |
| Uniform Delay, d1 | | 15.5 | 10.4 | | 16.6 | 13.9 |
| Progression Factor | | 1.10 | 1.31 | | 1.63 | 3.36 |
| Incremental Delay, d2 | | 178.2 | 1.1 | | 3.1 | 0.3 |
| Delay (s) | | 195.3 | 14.8 | | 30.1 | 47.0 |
| Level of Service | | F | B | | C | D |
| Approach Delay (s) | | 195.3 | 14.8 | | 34.6 | |
| Approach LOS | | F | B | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 121.3 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.04 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 100.9% | | ICU Level of Service | | G |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave























1/14/2013

| | → | ↘ | ↙ | ← | ↖ | ↗ |
|-----------------------------------|-------|--------|-------|----------------------|-------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↰ | | ↱ | ↰ | ↱ | |
| Volume (vph) | 1379 | 319 | 117 | 752 | 212 | 55 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.97 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2417 | | 1788 | 2506 | 1749 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2417 | | 243 | 2506 | 1749 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1407 | 326 | 119 | 767 | 216 | 56 |
| RTOR Reduction (vph) | 13 | 0 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 1720 | 0 | 119 | 767 | 259 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1153 | | 116 | 1195 | 646 | |
| v/s Ratio Prot | c0.71 | | | 0.31 | c0.15 | |
| v/s Ratio Perm | | | 0.49 | | | |
| v/c Ratio | 1.49 | | 1.03 | 0.64 | 0.40 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 12.8 | 15.2 | |
| Progression Factor | 1.52 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 221.7 | | 90.7 | 2.7 | 1.9 | |
| Delay (s) | 247.5 | | 107.7 | 15.5 | 17.0 | |
| Level of Service | F | | F | B | B | |
| Approach Delay (s) | 247.5 | | | 27.9 | 17.0 | |
| Approach LOS | F | | | C | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 158.5 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.02 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 10.0 |
| Intersection Capacity Utilization | | 111.3% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 1642 | 83 | 108 | 849 | 1 | 70 | 0 | 149 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.30 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 601 | 3431 | 1479 | 127 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1824 | 92 | 120 | 943 | 1 | 78 | 0 | 166 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 141 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1824 | 65 | 120 | 943 | 1 | 0 | 78 | 25 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 49.8 | 49.8 | 49.8 | 67.3 | 67.3 | 67.3 | | 9.7 | 9.7 | | | |
| Effective Green, g (s) | 49.8 | 49.8 | 49.8 | 67.3 | 67.3 | 67.3 | | 9.7 | 9.7 | | | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.79 | 0.79 | 0.79 | | 0.11 | 0.11 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 352 | 2010 | 867 | 350 | 2629 | 1211 | | 176 | 171 | | | |
| v/s Ratio Prot | | c0.53 | | 0.06 | c0.28 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.21 | | 0.00 | | c0.05 | 0.02 | | | |
| v/c Ratio | 0.00 | 0.91 | 0.07 | 0.34 | 0.36 | 0.00 | | 0.44 | 0.15 | | | |
| Uniform Delay, d1 | 7.3 | 15.6 | 7.6 | 14.0 | 2.6 | 1.8 | | 35.1 | 33.9 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 7.4 | 0.2 | 0.6 | 0.1 | 0.0 | | 1.8 | 0.4 | | | |
| Delay (s) | 7.3 | 23.0 | 7.8 | 14.5 | 2.7 | 1.8 | | 36.9 | 34.3 | | | |
| Level of Service | A | C | A | B | A | A | | D | C | | | |
| Approach Delay (s) | | 22.3 | | | 4.0 | | | 35.1 | | | 0.0 | |
| Approach LOS | | C | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | | HCM Level of Service | | B | | | |
| HCM Volume to Capacity ratio | | | 0.74 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 69.2% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















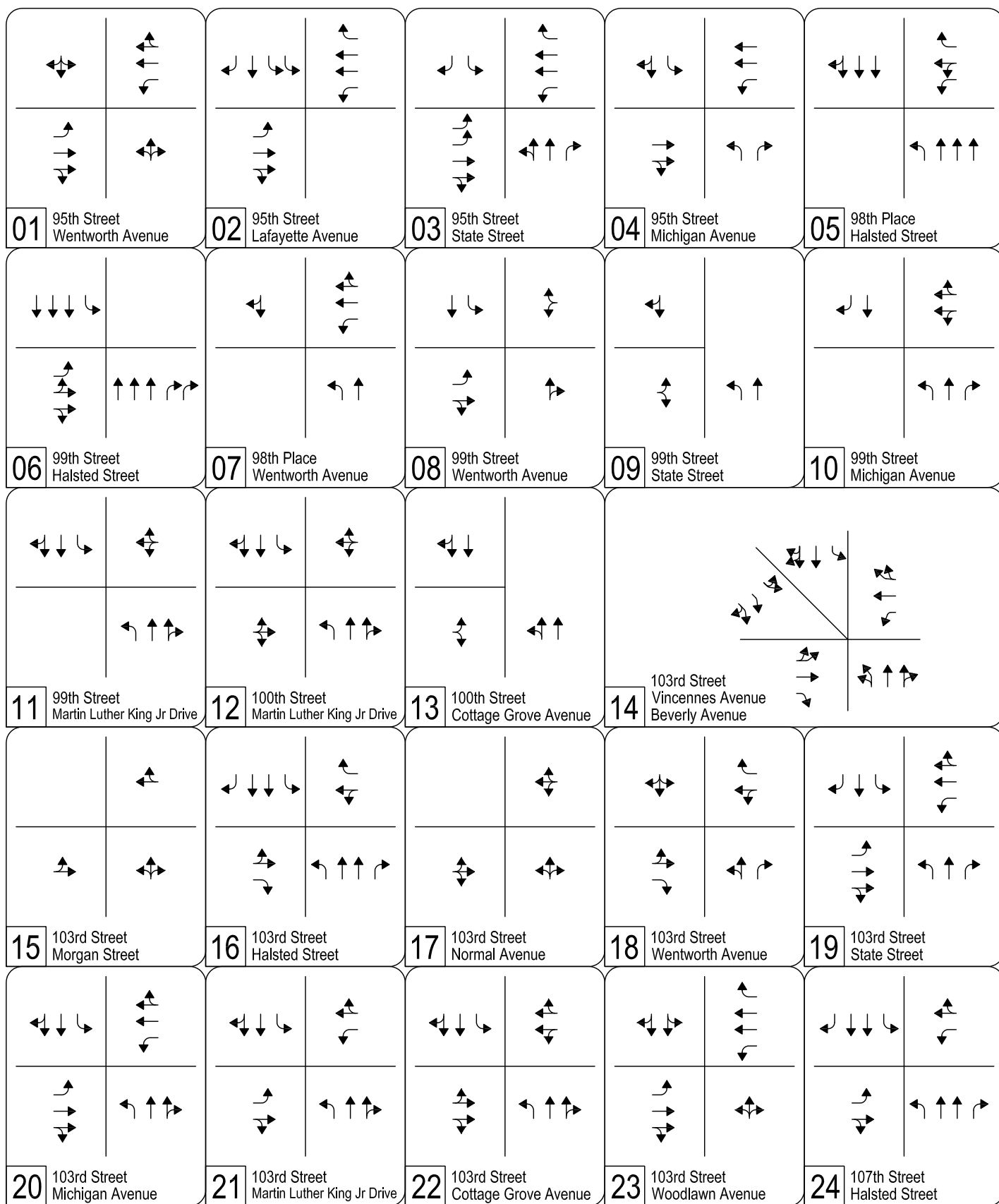
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 9 | 924 | 810 | 29 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3098 | 3083 | | 1533 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2924 | 3083 | | 1533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 10 | 1027 | 900 | 32 | 79 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 1037 | 929 | 0 | 86 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1072 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.30 | | c0.06 | |
| v/s Ratio Perm | | c0.35 | | | | |
| v/c Ratio | | 0.97 | 0.42 | | 0.72 | |
| Uniform Delay, d1 | | 28.0 | 5.4 | | 40.5 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 20.7 | 0.2 | | 31.1 | |
| Delay (s) | | 48.6 | 0.3 | | 71.7 | |
| Level of Service | | D | A | | E | |
| Approach Delay (s) | | 48.6 | 0.3 | | 71.7 | |
| Approach LOS | | D | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 27.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.74 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 46.1% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

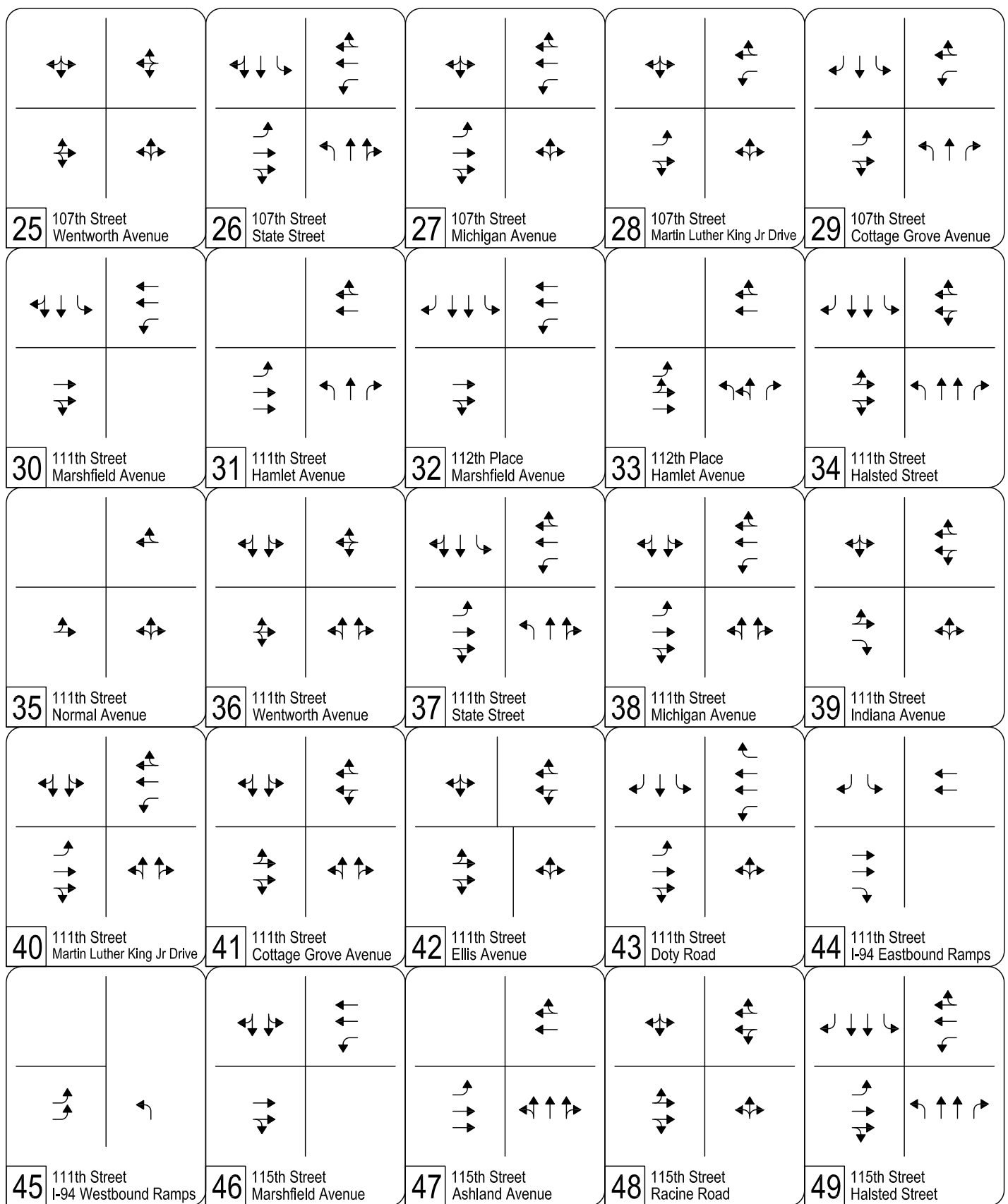
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 58 | 496 | 0 | 1 | 564 | 38 | 3 | 2 | 28 | 192 | 0 | 131 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1771 | | | 3340 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.87 | | | 0.95 | | | 0.93 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1554 | | | 3190 | | | 1370 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 64 | 551 | 0 | 1 | 627 | 42 | 3 | 2 | 31 | 213 | 0 | 146 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 0 | 615 | 0 | 0 | 664 | 0 | 0 | 8 | 0 | 0 | 213 | 48 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 567 | | | 1714 | | | 145 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.40 | | | 0.14 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.08 | | | 0.39 | | | 0.06 | | | 0.45 | 0.11 |
| Uniform Delay, d1 | | 27.0 | | | 11.8 | | | 34.2 | | | 24.4 | 19.8 |
| Progression Factor | | 1.00 | | | 1.28 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 62.8 | | | 0.1 | | | 0.8 | | | 3.0 | 0.5 |
| Delay (s) | | 89.8 | | | 15.2 | | | 34.9 | | | 27.4 | 20.3 |
| Level of Service | | F | | | B | | | C | | | C | C |
| Approach Delay (s) | | 89.8 | | | 15.2 | | | 34.9 | | | 24.5 | |
| Approach LOS | | F | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 44.9 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 76.9% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



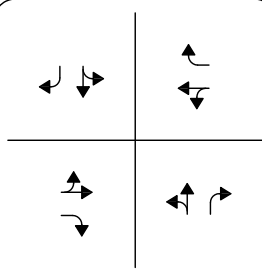
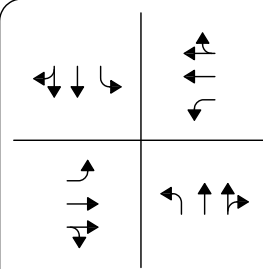
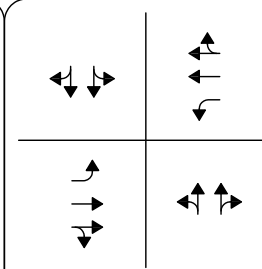
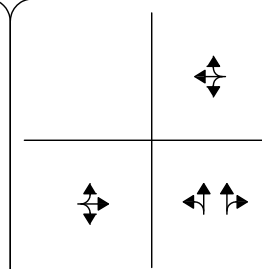
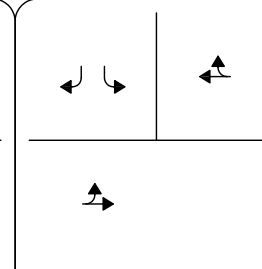
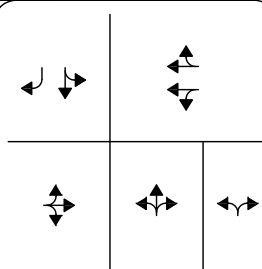
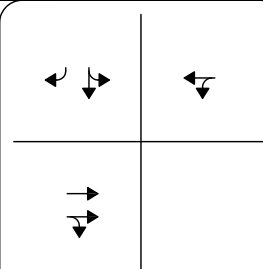
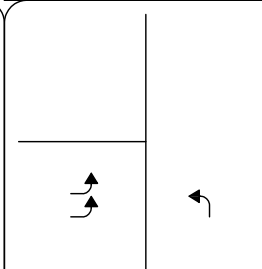
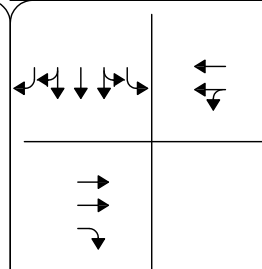
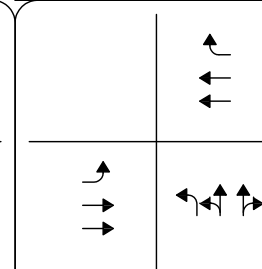
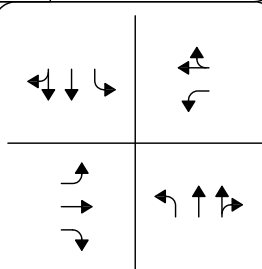
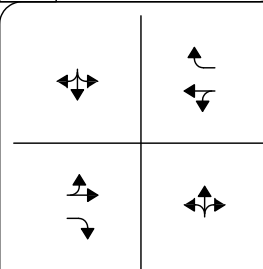
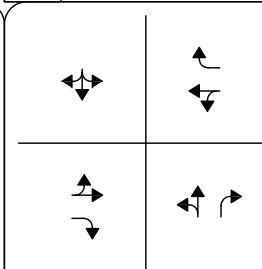
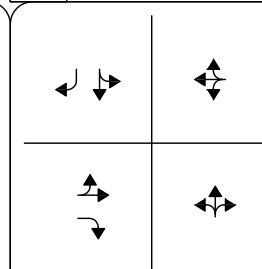
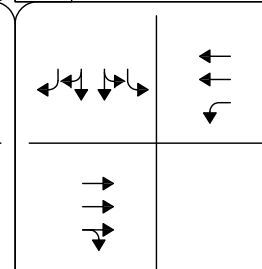
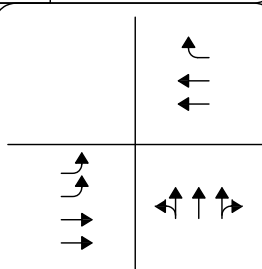
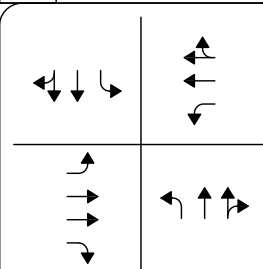
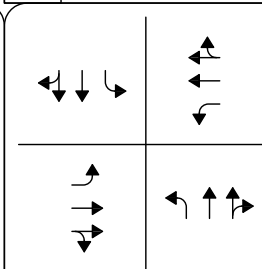
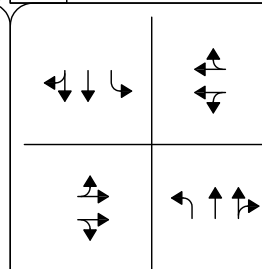
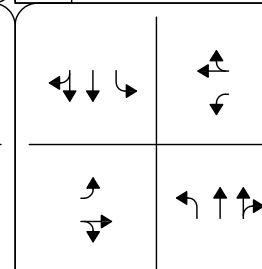
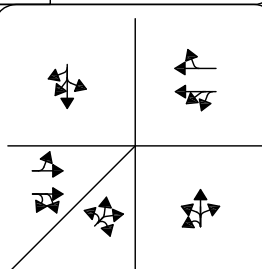
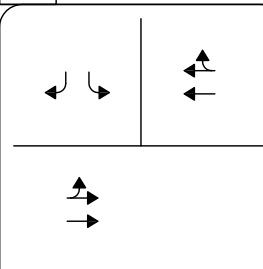
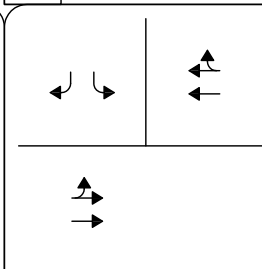
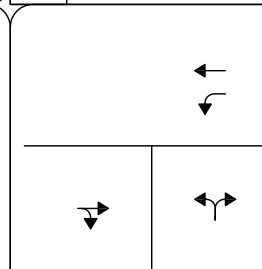
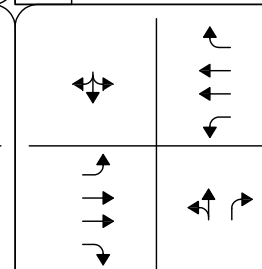
Halsted Rail Alternative (2030) Intersection Lane Geometry

Page 1 of 3



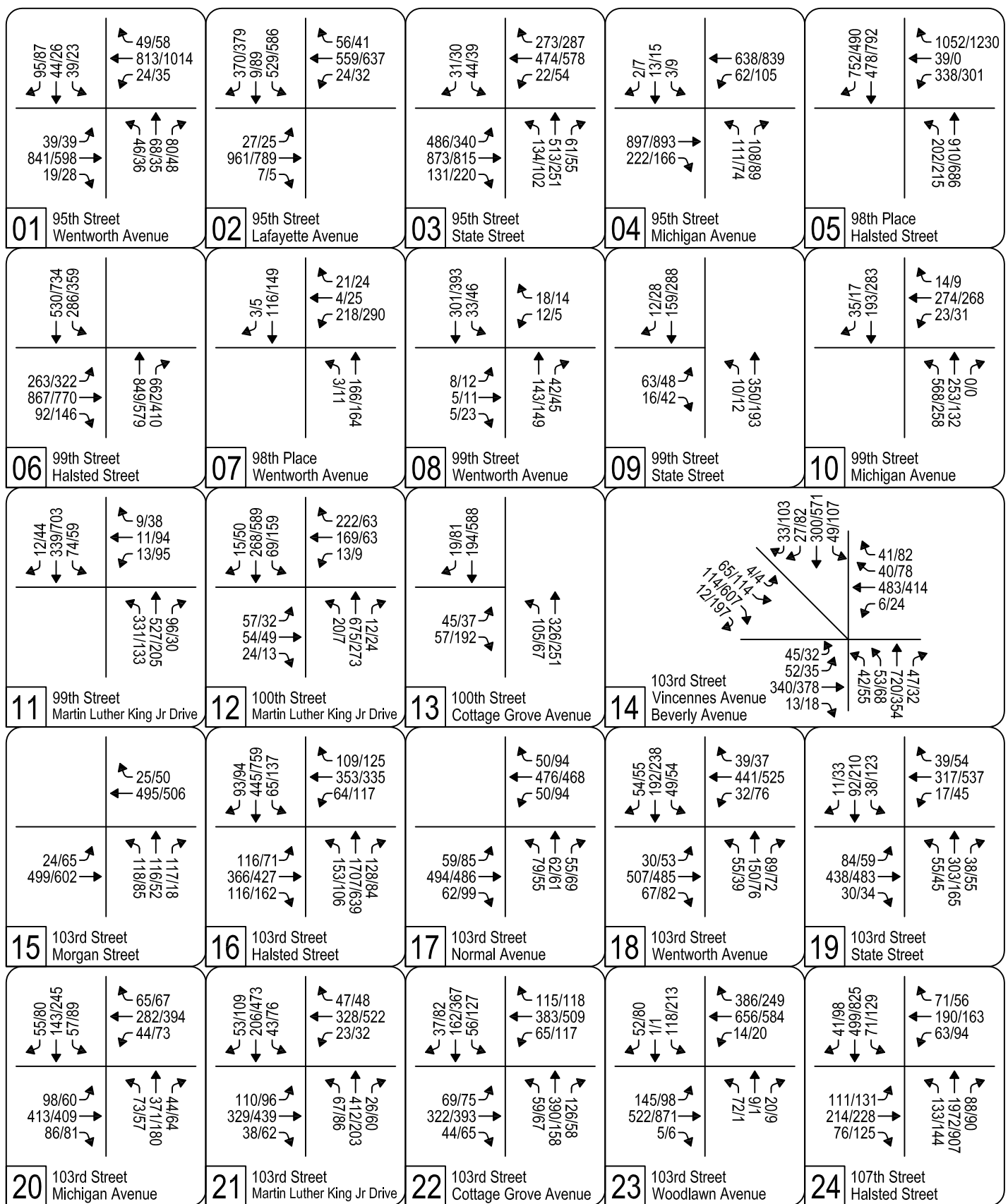
Halsted Rail Alternative (2030) Intersection Lane Geometry

Page 2 of 3

| | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| 50 111th Street Wentworth Avenue | 51 115th Street State Street | 52 115th Street Michigan Avenue | 53 115th Street Indiana Avenue | 54 115th Street Martin Luther King Jr Drive |
|  |  |  |  |  |
| 55 115th Street Cottage Grove Avenue | 56 115th Street I-94 Eastbound Ramps | 57 115th Street I-94 Westbound Ramps | 58 119th Street Marshfield Avenue | 59 119th Street Ashland Avenue |
|  |  |  |  |  |
| 60 119th Street Halsted Street | 61 119th Street Wentworth Avenue | 62 119th Street State Street | 63 119th Street Michigan Avenue | 64 127th Street Paulina Street |
|  |  |  |  |  |
| 65 127th Street Marshfield Avenue | 66 127th Street Ashland Avenue | 67 Vermont Street Ashland Avenue | 68 127th Street Halsted Street | 69 Vermont Street Halsted Street |
|  |  |  |  |  |
| 70 127th Street/Vermont Street/Wallace Street | 71 127th Street State Street | 72 127th Street Michigan Avenue | 73 130th Street Indiana Avenue | 74 130th Street Ellis Avenue |

Halsted Rail Alternative (2030) Intersection Lane Geometry

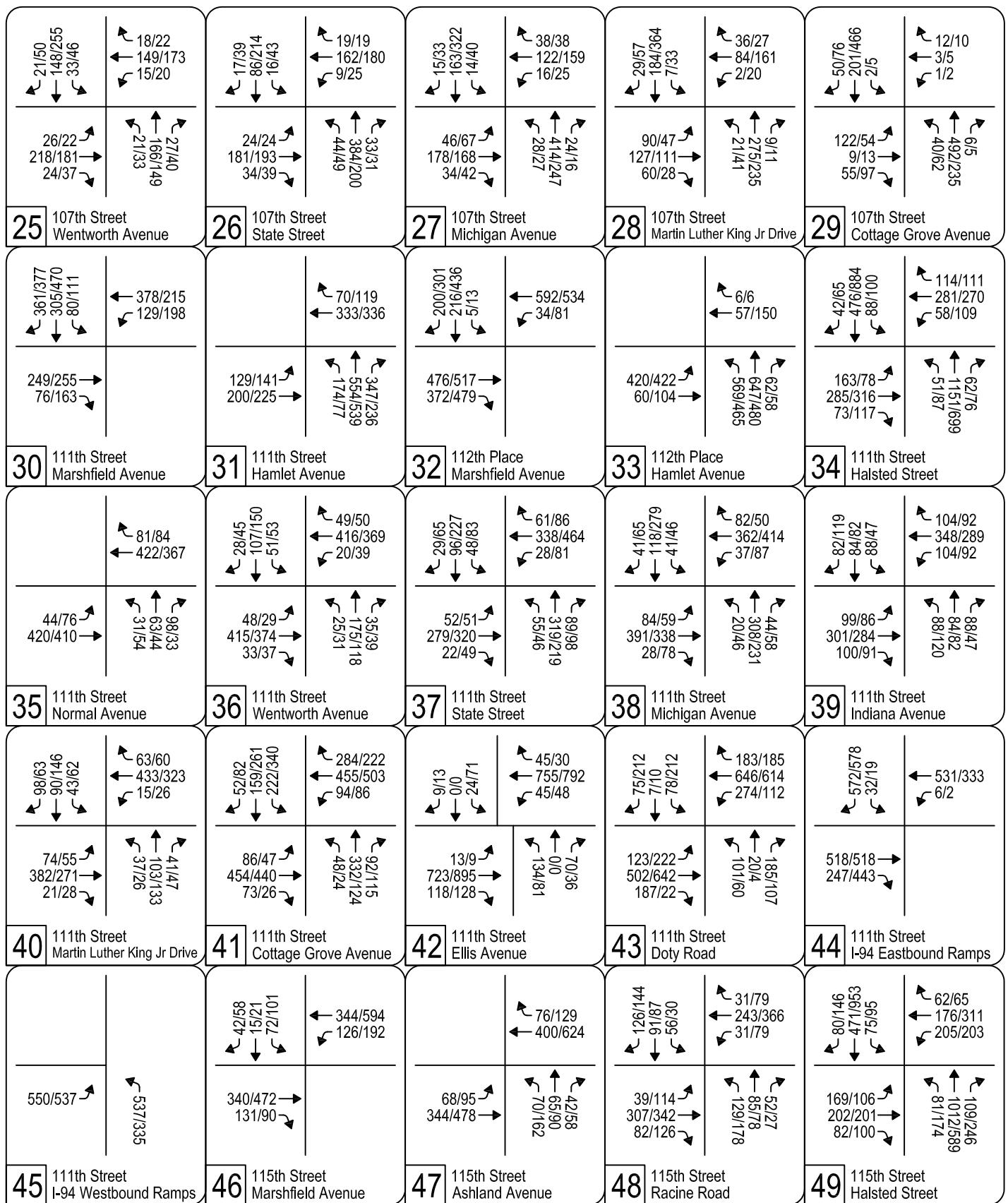
Page 3 of 3



Halsted Rail Alternative (2030) Intersection Traffic Volumes

Page 1 of 3

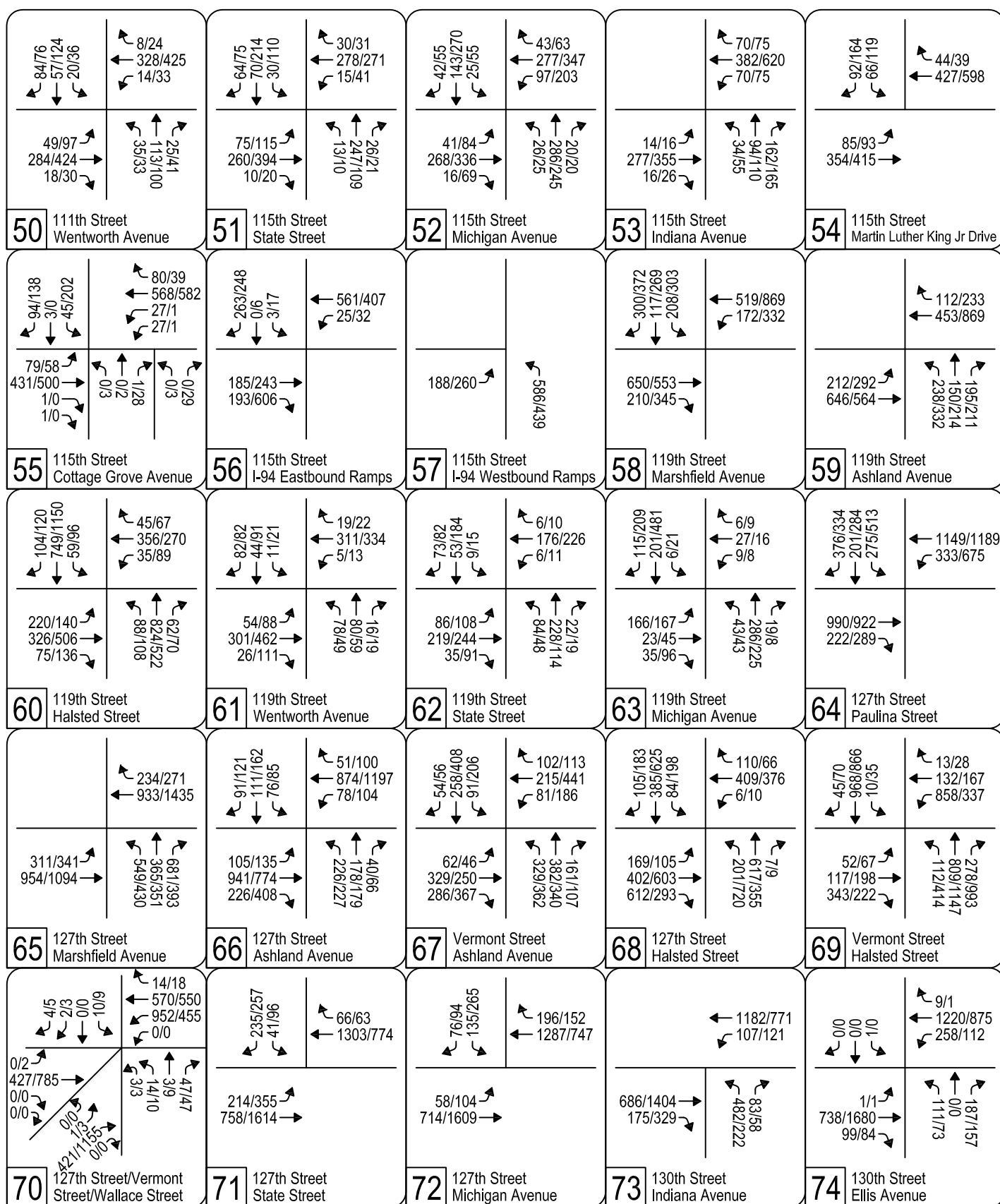
Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 68 | 80 | 39 | 44 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1755 | | | 1673 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1532 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 72 | 84 | 41 | 46 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 165 | 0 | 0 | 128 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | | c0.30 | | | 0.30 | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.24 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.6 | | | 16.4 | | | 15.8 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.1 | | | 13.5 | | | 16.4 | | | 15.8 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 56 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 59 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 33 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | | Perm | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.12 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.4 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.63 | 1.53 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.5 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.2 | 48.9 | | 4.5 | 10.0 | 20.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 10.7 | | | 0.0 | | | 55.4 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 474 | 273 | 134 | 513 | 61 | 44 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 499 | 287 | 141 | 540 | 64 | 46 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 512 | 1049 | 0 | 23 | 499 | 129 | 0 | 681 | 39 | 46 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.17 | | | c0.21 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.49 | 0.67 | | 0.21 | 0.72 | 0.57 | | 0.89 | 0.12 | 0.87 | | 0.05 |
| Uniform Delay, d1 | 34.7 | 24.5 | | 57.2 | 45.5 | 43.6 | | 48.5 | 39.5 | 60.5 | | 57.4 |
| Progression Factor | 0.75 | 0.20 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 6.2 | 10.1 | | 14.9 | 0.7 | 76.0 | | 0.4 |
| Delay (s) | 26.9 | 6.0 | | 61.6 | 51.7 | 53.8 | | 60.7 | 36.2 | 136.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.8 | | | 52.7 | | | 58.6 | | | 103.6 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.8 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | 13.0 | | | |
| Intersection Capacity Utilization | | | 72.7% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  |  |
| Volume (vph) | 0 | 897 | 222 | 62 | 638 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 267 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 247 | 69 | 709 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1222 | 0 | 69 | 709 | 0 | 123 | 0 | 43 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | | | Perm | | | custom | | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | 2 | | 2 | | 6 | | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1716 | | 160 | 1803 | | 350 | | 469 | 577 | 622 | |
| v/s Ratio Prot | | c0.43 | | | 0.24 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | 0.26 | | c0.11 | | | 0.03 | 0.00 | | |
| v/c Ratio | | 0.71 | | 0.43 | 0.39 | | 0.35 | | 0.09 | 0.01 | 0.02 | |
| Uniform Delay, d1 | | 14.0 | | 10.8 | 10.5 | | 26.0 | | 23.8 | 23.2 | 23.3 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.5 | | 8.3 | 0.6 | | 2.8 | | 0.4 | 0.0 | 0.1 | |
| Delay (s) | | 16.5 | | 19.1 | 11.1 | | 28.8 | | 24.2 | 23.2 | 23.4 | |
| Level of Service | | B | | B | B | | C | | C | C | C | |
| Approach Delay (s) | | 16.5 | | | 11.8 | | | 26.5 | | | 23.3 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 60.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 338 | 39 | 1052 | 202 | 910 | 0 | 0 | 478 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 488 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 1255 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.23 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.77 | 0.08 | 2.54 | 0.44 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.7 | 26.7 | 37.5 | 29.3 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.38 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.8 | 0.3 | 698.4 | 2.0 | 0.2 | | | 50.5 | |
| Delay (s) | | | | 45.5 | 27.1 | 735.9 | 21.3 | 22.1 | | | 87.5 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.1 | | | 22.0 | | | 87.5 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.6 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 92 | 0 | 0 | 0 | 0 | 849 | 662 | 286 | 530 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 95 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 546 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1009 | 0 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 546 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.12 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.20 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.46 | 1.06 | 0.42 | |
| Incremental Delay, d2 | 3.7 | 23.4 | | | | | | 0.4 | 78.3 | 2.2 | 0.1 | |
| Delay (s) | 32.4 | 58.5 | | | | | | 15.7 | 95.9 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.5 | | | 0.0 | | | 50.8 | | | 15.4 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.6 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | |  |  | |  |  | | |  | | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 166 | 0 | 0 | 116 | 3 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 781 | 1882 | | | 1961 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 184 | 0 | 0 | 129 | 3 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 184 | 0 | 0 | 131 | 0 | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% | |
| Turn Type | | | | Perm | | | pm+pt | | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 40.0 |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 46.0 |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.54 |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 |
| Lane Grp Cap (vph) | | | | 501 | | | 861 | | | 501 | | | 1061 |
| v/s Ratio Prot | | | | | | | 0.00 | | | 0.00 | | | 0.07 |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | | |
| v/c Ratio | | | | 0.48 | | | 0.01 | | | 0.01 | | | 0.12 |
| Uniform Delay, d1 | | | | 23.4 | | | 19.9 | | | 10.0 | | | 9.6 |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.06 | | | 1.00 |
| Incremental Delay, d2 | | | | 3.3 | | | 0.0 | | | 0.0 | | | 0.2 |
| Delay (s) | | | | 26.7 | | | 19.9 | | | 10.6 | | | 9.8 |
| Level of Service | | | | C | | | B | | | B | | | A |
| Approach Delay (s) | 0.0 | | | | | | 26.0 | | | 9.8 | | | 9.8 |
| Approach LOS | A | | | | | | C | | | A | | | A |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 143 | 42 | 33 | 301 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1686 | | 1005 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 151 | 44 | 35 | 317 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 183 | 0 | 35 | 317 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 640 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.4 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.93 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.8 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 16 | 10 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.16 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.4 | 8.9 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.9 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↕↕ | | ↗ | ↖ | | | ↖ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 23 | 274 | 14 | 568 | 253 | 0 | 0 | 193 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3738 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.57 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3738 | | 1002 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 304 | 16 | 631 | 281 | 0 | 0 | 214 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 342 | 0 | 631 | 281 | 0 | 0 | 214 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 679 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.93 | 0.27 | | | 0.30 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.0 | 8.1 | | | 15.0 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 21.0 | 0.6 | | | 1.1 | 0.1 |
| Delay (s) | | | | | 23.2 | | 38.0 | 8.7 | | | 16.1 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 29.0 | | | 15.6 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

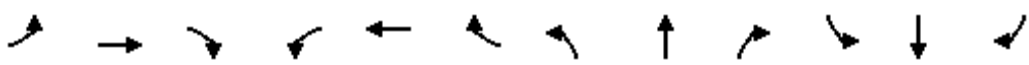
1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 13 | 11 | 9 | 331 | 527 | 96 | 74 | 339 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1796 | | 1692 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1796 | | 894 | 3237 | | 566 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 14 | 12 | 10 | 368 | 586 | 107 | 82 | 377 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 29 | 0 | 368 | 673 | 0 | 82 | 387 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 551 | | 563 | 1467 | | 416 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.05 | | 0.65 | 0.46 | | 0.20 | 0.25 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.7 | 14.2 | | 12.3 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.3 | 0.9 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 14.8 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 12.6 | | | 13.1 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 675 | 12 | 69 | 268 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.57 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 957 | 3232 | | 575 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 711 | 13 | 73 | 282 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 722 | 0 | 73 | 293 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 536 | 1810 | | 322 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.09 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.3 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.17 | 0.06 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.0 | 0.7 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 9.9 | | | 1.1 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 69.8% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | | | | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 326 | 194 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 362 | 216 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 237 | 241 | 144 | 93 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 628 | 654 | 684 | 641 | 660 | |
| Control Delay (s) | 9.3 | 10.1 | 9.6 | 8.7 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 340 | 13 | 6 | 483 | 40 | 41 | 42 | 53 | 720 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3289 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 967 | 1731 | 1487 | | | 700 | 3289 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 378 | 14 | 7 | 537 | 44 | 46 | 47 | 59 | 800 | 52 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 378 | 7 | 7 | 537 | 58 | 0 | 0 | 106 | 847 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 295 | 528 | 453 | | | 167 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.22 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.46 | 0.01 | 0.02 | 1.02 | 0.13 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.3 | 18.4 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.8 | 0.0 | 0.1 | 43.5 | 0.6 | | | 17.0 | 56.8 | |
| Delay (s) | | 24.2 | 20.3 | 14.5 | 25.7 | 80.0 | 27.0 | | | 52.9 | 96.8 | |
| Level of Service | | C | C | B | C | F | C | | | D | F | |
| Approach Delay (s) | | | 21.0 | | | 71.9 | | | | | 91.9 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.7 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 80.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 49 | 300 | 27 | 33 | 4 | 65 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 54 | 333 | 30 | 37 | 4 | 72 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 54 | 392 | 0 | 0 | 0 | 76 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.05 | |
| v/c Ratio | 0.79 | 0.51 | | | | 0.27 | 0.31 | |
| Uniform Delay, d1 | 37.9 | 35.1 | | | | 38.2 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 61.4 | 2.4 | | | | 2.3 | 1.8 | |
| Delay (s) | 99.3 | 37.5 | | | | 40.4 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 44.9 | | | | 40.3 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 499 | 0 | 0 | 495 | 25 | 118 | 116 | 117 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1771 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1598 | | | 1930 | | | 1771 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 554 | 0 | 0 | 550 | 28 | 131 | 129 | 130 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 581 | 0 | 0 | 578 | 0 | 0 | 390 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 762 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.76 | | | 0.63 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 14.0 | | | 12.7 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.1 | | | 3.2 | | | 3.1 | | | | |
| Delay (s) | | 21.1 | | | 15.9 | | | 18.1 | | | | |
| Level of Service | | C | | | B | | | B | | | | |
| Approach Delay (s) | | 21.1 | | | 15.9 | | | 18.1 | | | 0.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.67 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 75.9% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 366 | 116 | 64 | 353 | 109 | 153 | 1707 | 128 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1923 | 1426 | | 1923 | 1396 | 1500 | 3099 | 1284 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.55 | 1.00 | | 0.62 | 1.00 | 0.40 | 1.00 | 1.00 | 0.09 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1062 | 1426 | | 1194 | 1396 | 625 | 3099 | 1284 | 142 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 385 | 122 | 67 | 372 | 115 | 161 | 1797 | 135 | 68 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 72 | 0 | 0 | 68 | 0 | 0 | 29 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 507 | 50 | 0 | 439 | 47 | 161 | 1797 | 106 | 68 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 53.1 | 44.4 | 44.4 | 48.9 | 42.3 | 42.3 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.51 | 0.42 | 0.42 | 0.47 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 435 | 584 | | 489 | 572 | 389 | 1310 | 543 | 147 | 1191 | 510 |
| v/s Ratio Prot | | | | | | | c0.03 | c0.58 | | c0.03 | 0.16 | |
| v/s Ratio Perm | | c0.48 | 0.04 | | 0.37 | 0.03 | 0.18 | | 0.08 | 0.19 | | 0.03 |
| v/c Ratio | | 1.17 | 0.09 | | 0.90 | 0.08 | 0.41 | 1.37 | 0.19 | 0.46 | 0.39 | 0.08 |
| Uniform Delay, d1 | | 31.0 | 19.0 | | 28.9 | 18.9 | 14.8 | 30.3 | 19.1 | 23.1 | 22.2 | 19.3 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.11 | 0.75 | 0.39 |
| Incremental Delay, d2 | | 96.9 | 0.3 | | 21.9 | 0.3 | 0.7 | 172.2 | 0.8 | 2.2 | 0.9 | 0.3 |
| Delay (s) | | 127.9 | 19.3 | | 50.8 | 19.2 | 15.5 | 202.5 | 19.9 | 27.9 | 17.5 | 7.7 |
| Level of Service | | F | B | | D | B | B | F | B | C | B | A |
| Approach Delay (s) | | 106.8 | | | 44.3 | | | 176.3 | | | 17.1 | |
| Approach LOS | | F | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 120.6 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 1.21 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 117.4% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 494 | 62 | 50 | 476 | 50 | 79 | 62 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1630 | | | 1779 | | | | |
| Flt Permitted | | 0.90 | | | 0.91 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1473 | | | 1489 | | | 1779 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 549 | 69 | 56 | 529 | 56 | 88 | 69 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 678 | 0 | 0 | 636 | 0 | 0 | 197 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 861 | | | 870 | | | 520 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.46 | | | 0.43 | | | 0.11 | | | | |
| v/c Ratio | | 0.79 | | | 0.73 | | | 0.38 | | | | |
| Uniform Delay, d1 | | 10.4 | | | 9.8 | | | 18.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.2 | | | 5.4 | | | 2.1 | | | | |
| Delay (s) | | 17.6 | | | 15.2 | | | 20.4 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 17.6 | | | 15.2 | | | 20.4 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 65.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  | |
| Volume (vph) | 30 | 507 | 67 | 32 | 441 | 39 | 55 | 150 | 89 | 49 | 192 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1737 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1595 | 1255 | | 1554 | 1288 | | 1416 | 1490 | | 1607 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 32 | 534 | 71 | 34 | 464 | 41 | 58 | 158 | 94 | 52 | 202 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 16 | 0 | 0 | 64 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 566 | 41 | 0 | 498 | 25 | 0 | 216 | 30 | 0 | 300 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 914 | 720 | | 891 | 738 | | 453 | 477 | | 514 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.03 | | 0.32 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.62 | 0.06 | | 0.56 | 0.03 | | 0.48 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.6 | 7.1 | | 10.0 | 7.0 | | 20.5 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.1 | 0.1 | | 2.5 | 0.1 | | 3.6 | 0.3 | | 4.8 | |
| Delay (s) | | 13.7 | 7.2 | | 12.6 | 7.0 | | 24.0 | 18.0 | | 26.1 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.0 | | | 12.2 | | | 22.2 | | | 26.1 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.6 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.61 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 95.3% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 438 | 30 | 17 | 317 | 39 | 55 | 303 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1464 | 2990 | | 1459 | 3534 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.51 | 1.00 | | 0.43 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 788 | 2990 | | 658 | 3534 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 487 | 33 | 19 | 352 | 43 | 61 | 337 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 15 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 93 | 513 | 0 | 19 | 380 | 0 | 61 | 337 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 376 | 1426 | | 314 | 1685 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.11 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.25 | 0.36 | | 0.06 | 0.23 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.1 | 10.7 | | 9.2 | 10.0 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.60 | 0.74 | 0.31 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.6 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.1 | 0.6 | 0.0 |
| Delay (s) | 11.6 | 11.4 | | 9.5 | 10.3 | | 8.0 | 13.6 | 3.8 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.5 | | | 10.2 | | | 11.9 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 98 | 413 | 86 | 44 | 282 | 65 | 73 | 371 | 44 | 57 | 143 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1464 | 3056 | | 1588 | 3009 | | 1541 | 3022 | | 1403 | 2767 | |
| Flt Permitted | 0.52 | 1.00 | | 0.42 | 1.00 | | 0.62 | 1.00 | | 0.46 | 1.00 | |
| Satd. Flow (perm) | 808 | 3056 | | 698 | 3009 | | 1007 | 3022 | | 678 | 2767 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 435 | 91 | 46 | 297 | 68 | 77 | 391 | 46 | 60 | 151 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 103 | 526 | 0 | 46 | 365 | 0 | 77 | 425 | 0 | 60 | 175 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 388 | 1467 | | 335 | 1444 | | 416 | 1249 | | 280 | 1144 | |
| v/s Ratio Prot | c0.17 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.13 | | | 0.07 | | | 0.08 | | | 0.09 | | |
| v/c Ratio | 0.27 | 0.36 | | 0.14 | 0.25 | | 0.19 | 0.34 | | 0.21 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.2 | | 10.9 | 11.5 | | 14.0 | 15.0 | | 14.2 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 0.9 | 0.4 | | 1.0 | 0.7 | | 1.7 | 0.3 | |
| Delay (s) | 13.3 | 12.9 | | 11.7 | 12.0 | | 15.0 | 15.8 | | 15.9 | 14.1 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 13.0 | | | 11.9 | | | 15.6 | | | 14.5 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 110 | 329 | 38 | 23 | 328 | 47 | 67 | 412 | 26 | 43 | 206 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1841 | | 1533 | 3073 | | 1372 | 2881 | |
| Flt Permitted | 0.45 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 720 | 1576 | | 713 | 1841 | | 942 | 3073 | | 597 | 2881 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 116 | 346 | 40 | 24 | 345 | 49 | 71 | 434 | 27 | 45 | 217 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 116 | 386 | 0 | 24 | 394 | 0 | 71 | 461 | 0 | 45 | 273 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 448 | 738 | | 358 | 793 | | 329 | 730 | | 193 | 630 | |
| v/s Ratio Prot | c0.02 | c0.24 | | 0.00 | 0.21 | | c0.01 | c0.15 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.26 | 0.52 | | 0.07 | 0.50 | | 0.22 | 0.63 | | 0.23 | 0.43 | |
| Uniform Delay, d1 | 13.5 | 15.9 | | 15.0 | 17.5 | | 21.5 | 29.1 | | 26.1 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.6 | | 0.1 | 2.2 | | 0.3 | 4.1 | | 0.6 | 2.2 | |
| Delay (s) | 13.8 | 18.6 | | 15.1 | 19.7 | | 21.9 | 33.2 | | 26.8 | 30.8 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.5 | | | 19.5 | | | 31.7 | | | 30.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 63.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 69 | 322 | 44 | 65 | 383 | 115 | 59 | 390 | 126 | 56 | 162 | 37 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2913 | | 1614 | 3156 | | 1581 | 2921 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2748 | | | 2465 | | 1042 | 3156 | | 628 | 2921 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 77 | 358 | 49 | 72 | 426 | 128 | 66 | 433 | 140 | 62 | 180 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 0 | 0 | 626 | 0 | 66 | 573 | 0 | 62 | 221 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1246 | | | 1117 | | 458 | 1389 | | 276 | 1285 | |
| v/s Ratio Prot | | | | | | | c0.18 | | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.25 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.14 | 0.41 | | 0.22 | 0.17 | |
| Uniform Delay, d1 | | 13.6 | | | 15.0 | | 12.6 | 14.4 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.0 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.5 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.5 | | | 17.1 | | | 15.1 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.8% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 522 | 5 | 14 | 656 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 585 | 3144 | | 721 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 580 | 6 | 16 | 729 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 585 | 0 | 16 | 729 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 381 | 2046 | | 469 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.22 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.42 | 0.29 | | 0.03 | 0.34 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.4 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.4 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 8.6 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 70.7 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 56.2% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 76 | 63 | 190 | 71 | 133 | 1972 | 88 | 71 | 499 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1498 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1498 | | 521 | 1584 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 80 | 66 | 200 | 75 | 140 | 2076 | 93 | 75 | 525 | 43 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 290 | 0 | 66 | 259 | 0 | 140 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 388 | | 232 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.71 | 0.50 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.4 | | 3.1 | 7.2 | | 2.7 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.4 | | 24.9 | 35.2 | | 11.0 | 309.8 | 8.2 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.8 | | | 33.2 | | | 279.5 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.4 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013





















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 26 | 218 | 24 | 15 | 149 | 18 | 21 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1843 | | | 1836 | | | 1900 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1787 | | | 1790 | | | 1844 | | | 1822 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 25 | 15 | 154 | 19 | 22 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 272 | 0 | 0 | 182 | 0 | 0 | 213 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 742 | | | 744 | | | 851 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.12 | | | 0.11 | |
| v/c Ratio | | 0.37 | | | 0.24 | | | 0.25 | | | 0.24 | |
| Uniform Delay, d1 | | 13.1 | | | 12.4 | | | 10.7 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.08 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 0.8 | | | 0.7 | | | 0.7 | |
| Delay (s) | | 14.5 | | | 8.6 | | | 12.2 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.5 | | | 8.6 | | | 12.2 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 44 | 384 | 33 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 49 | 427 | 37 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 49 | 454 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.6 | | 5.7 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.76 | 0.74 | | 0.93 | 0.96 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.9 | 13.5 | | 12.8 | 13.4 | | 5.7 | 6.6 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 13.5 | | | 13.3 | | | 6.5 | | | 2.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.0 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 40.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 14 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1808 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1838 | | | 1739 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 16 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 209 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 829 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.01 | 0.92 | | 0.86 | 0.88 | | | 1.02 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.1 | 12.0 | | 10.5 | 11.1 | | | 15.4 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.2 | | | 11.0 | | | 15.4 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.40 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 59.3% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 90 | 127 | 60 | 2 | 84 | 36 | 21 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1879 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.57 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1879 | | 950 | 1870 | | | 1928 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 67 | 2 | 93 | 40 | 23 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 208 | 0 | 2 | 133 | 0 | 0 | 339 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 578 | | 292 | 575 | | | 1097 | | | 1091 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.36 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.5 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.90 | 0.89 | | 0.89 | 0.92 | | | 0.94 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.7 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.5 | 17.4 | | 14.0 | 16.3 | | | 7.6 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.4 | | | 16.3 | | | 7.6 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 45.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.41 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.32 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.1 | 41.9 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.8 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|-------|----------------------|------|------|------|------|--------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 249 | 76 | 129 | 378 | 0 | 0 | 0 | 0 | 80 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2829 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.49 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2829 | | 835 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 262 | 80 | 136 | 398 | 0 | 0 | 0 | 0 | 84 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 313 | 0 | 136 | 398 | 0 | 0 | 0 | 0 | 84 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | 648 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | c0.05 | 0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.34 | | 0.21 | 0.21 | | | | | 0.17 | 0.52 | |
| Uniform Delay, d1 | | 25.2 | | 10.6 | 9.6 | | | | | 24.4 | 27.8 | |
| Progression Factor | | 1.00 | | 1.97 | 2.07 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.2 | | 21.5 | 19.9 | | | | | 25.1 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.2 | | | 20.4 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | HCM Level of Service | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | Sum of lost time (s) | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Ashland Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 200 | 0 | 0 | 333 | 70 | 174 | 554 | 347 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2833 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.33 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 583 | 3054 | | | 2833 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 211 | 0 | 0 | 351 | 74 | 183 | 583 | 365 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 245 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 211 | 0 | 0 | 408 | 0 | 183 | 583 | 120 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 675 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.08 | | | |
| v/c Ratio | 0.20 | 0.12 | | | 0.69 | | 0.32 | 0.99 | 0.24 | | | |
| Uniform Delay, d1 | 11.8 | 9.5 | | | 36.4 | | 25.1 | 33.4 | 24.4 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.76 | 0.79 | 1.91 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 6.3 | | 0.9 | 27.9 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.7 | | 19.9 | 54.1 | 47.3 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.7 | | | 46.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 476 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 5 | 216 | 200 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3112 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3112 | | 268 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 496 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 5 | 225 | 208 |
| RTOR Reduction (vph) | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137 |
| Lane Group Flow (vph) | 0 | 743 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 5 | 225 | 71 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1120 | | 387 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.24 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.66 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.9 | | 12.6 | 10.9 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.78 | 0.90 |
| Incremental Delay, d2 | | 3.1 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.6 |
| Delay (s) | | 30.0 | | 7.0 | 7.6 | | | | | 16.0 | 18.7 | 21.3 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 30.0 | | | 7.5 | | | 0.0 | | | 19.9 | |
| Approach LOS | | C | | | A | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Ashland Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 420 | 60 | 0 | 0 | 57 | 6 | 569 | 647 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3040 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1083 | 2333 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 433 | 62 | 0 | 0 | 59 | 6 | 587 | 667 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 216 | 279 | 0 | 0 | 60 | 0 | 587 | 667 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | custom | | | custom | | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1444 | | | 461 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.1 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.22 | 0.24 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.9 | 0.2 | | | 0.6 | | 42.9 | 67.2 | 0.2 | | | |
| Delay (s) | 4.0 | 3.4 | | | 37.4 | | 74.4 | 98.7 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.6 | | | 37.4 | | | 84.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.3 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 163 | 285 | 73 | 58 | 281 | 114 | 51 | 1151 | 62 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2843 | | | 2815 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.62 | | | 0.82 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1801 | | | 2328 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 297 | 76 | 60 | 293 | 119 | 53 | 1199 | 65 | 92 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 39 | 0 | 0 | 0 | 24 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 527 | 0 | 0 | 433 | 0 | 53 | 1199 | 41 | 92 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 836 | | | 767 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.22 | | | c0.19 | | 0.07 | | 0.03 | 0.24 | | 0.01 |
| v/c Ratio | | 0.63 | | | 0.56 | | 0.18 | 0.99 | 0.08 | 0.64 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 19.3 | | | 23.5 | | 14.8 | 25.6 | 16.4 | 19.0 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.34 | 0.87 | 1.43 | 1.82 | 1.64 | 3.14 |
| Incremental Delay, d2 | | 3.6 | | | 3.0 | | 0.8 | 17.5 | 0.2 | 18.1 | 1.0 | 0.1 |
| Delay (s) | | 22.9 | | | 26.5 | | 20.6 | 39.8 | 23.6 | 52.5 | 31.8 | 50.8 |
| Level of Service | | C | | | C | | C | D | C | D | C | D |
| Approach Delay (s) | | 22.9 | | | 26.5 | | | 38.2 | | | 36.1 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 82.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 420 | 0 | 0 | 422 | 81 | 31 | 63 | 98 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1677 | | | 1583 | | | | |
| Flt Permitted | | 0.92 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1577 | | | 1677 | | | 1583 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 467 | 0 | 0 | 469 | 90 | 34 | 70 | 109 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 58 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 516 | 0 | 0 | 549 | 0 | 0 | 155 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 825 | | | 877 | | | 560 | | | | |
| v/s Ratio Prot | | | | | 0.33 | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.63 | | | 0.63 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 11.0 | | | 11.0 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.63 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.6 | | | 2.8 | | | 1.2 | | | | |
| Delay (s) | | 14.6 | | | 9.7 | | | 16.3 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 14.6 | | | 9.7 | | | 16.3 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 76.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 48 | 415 | 33 | 20 | 416 | 49 | 25 | 175 | 35 | 51 | 107 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1842 | | | 3185 | | | 3126 | |
| Flt Permitted | | 0.92 | | | 0.97 | | | 0.92 | | | 0.83 | |
| Satd. Flow (perm) | | 1753 | | | 1794 | | | 2930 | | | 2630 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 461 | 37 | 22 | 462 | 54 | 28 | 194 | 39 | 57 | 119 | 31 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 0 | 547 | 0 | 0 | 532 | 0 | 0 | 239 | 0 | 0 | 189 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 809 | | | 828 | | | 1217 | | | 1092 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.30 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.68 | | | 0.64 | | | 0.20 | | | 0.17 | |
| Uniform Delay, d1 | | 13.7 | | | 13.4 | | | 12.1 | | | 12.0 | |
| Progression Factor | | 0.63 | | | 0.56 | | | 0.98 | | | 0.61 | |
| Incremental Delay, d2 | | 3.7 | | | 3.7 | | | 0.4 | | | 0.3 | |
| Delay (s) | | 12.4 | | | 11.1 | | | 12.2 | | | 7.6 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 12.4 | | | 11.1 | | | 12.2 | | | 7.6 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 82.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 279 | 22 | 28 | 338 | 61 | 55 | 319 | 89 | 48 | 96 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2936 | | 1584 | 2944 | | 1497 | 3034 | | 1594 | 2899 | |
| Flt Permitted | 0.44 | 1.00 | | 0.53 | 1.00 | | 0.66 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 697 | 2936 | | 890 | 2944 | | 1046 | 3034 | | 809 | 2899 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 58 | 310 | 24 | 31 | 376 | 68 | 61 | 354 | 99 | 53 | 107 | 32 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 58 | 325 | 0 | 31 | 422 | 0 | 61 | 414 | 0 | 53 | 124 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 236 | 994 | | 301 | 996 | | 563 | 1634 | | 436 | 1561 | |
| v/s Ratio Prot | | 0.11 | | | c0.14 | | | c0.14 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | 0.06 | | | 0.07 | | |
| v/c Ratio | 0.25 | 0.33 | | 0.10 | 0.42 | | 0.11 | 0.25 | | 0.12 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 16.0 | | 14.7 | 16.6 | | 7.4 | 8.0 | | 7.4 | 7.2 | |
| Progression Factor | 0.57 | 0.55 | | 0.78 | 0.80 | | 0.63 | 0.62 | | 1.30 | 1.35 | |
| Incremental Delay, d2 | 2.0 | 0.7 | | 0.7 | 1.3 | | 0.4 | 0.4 | | 0.6 | 0.1 | |
| Delay (s) | 10.9 | 9.6 | | 12.1 | 14.6 | | 5.0 | 5.4 | | 10.2 | 9.8 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.4 | | | 5.3 | | | 9.9 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.7 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 391 | 28 | 37 | 362 | 82 | 20 | 308 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1385 | 3013 | | 1335 | 3538 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 674 | 3013 | | 674 | 3538 | | | 3226 | | | 2808 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 88 | 412 | 29 | 39 | 381 | 86 | 21 | 324 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 30 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 88 | 433 | 0 | 39 | 437 | 0 | 0 | 375 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 321 | 1437 | | 321 | 1687 | | | 1290 | | | 1123 | |
| v/s Ratio Prot | | c0.14 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.27 | 0.30 | | 0.12 | 0.26 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.4 | | 9.4 | 10.1 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.60 | 1.64 | | 0.79 | 0.78 | | | 0.51 | | | 0.64 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.7 | 0.3 | | | 0.6 | | | 0.3 | |
| Delay (s) | 18.4 | 17.6 | | 8.2 | 8.2 | | | 7.3 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.7 | | | 8.2 | | | 7.3 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  | |
| Volume (vph) | 99 | 301 | 100 | 104 | 348 | 104 | 88 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3032 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.79 | | | 0.78 | |
| Satd. Flow (perm) | | 1230 | 1409 | | 2324 | | | 1456 | | | 1442 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 334 | 111 | 116 | 387 | 116 | 98 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 31 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 444 | 58 | 0 | 588 | 0 | 0 | 261 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 643 | 737 | | 1216 | | | 470 | | | 466 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.04 | | 0.25 | | | c0.18 | | | 0.18 | |
| v/c Ratio | | 0.69 | 0.08 | | 0.48 | | | 0.55 | | | 0.55 | |
| Uniform Delay, d1 | | 11.6 | 7.7 | | 9.9 | | | 18.1 | | | 18.1 | |
| Progression Factor | | 2.01 | 5.68 | | 0.42 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 5.9 | 0.2 | | 1.3 | | | 4.7 | | | 4.6 | |
| Delay (s) | | 29.1 | 44.0 | | 5.5 | | | 22.8 | | | 22.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 32.1 | | | 5.5 | | | 22.8 | | | 22.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 74 | 382 | 21 | 15 | 433 | 63 | 37 | 103 | 41 | 43 | 90 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1573 | 3001 | | | 3454 | | | 3403 | |
| Flt Permitted | 0.40 | 1.00 | | 0.47 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 616 | 3018 | | 771 | 3001 | | | 3030 | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 82 | 424 | 23 | 17 | 481 | 70 | 41 | 114 | 46 | 48 | 100 | 109 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 25 | 0 | 0 | 60 | 0 |
| Lane Group Flow (vph) | 82 | 441 | 0 | 17 | 533 | 0 | 0 | 176 | 0 | 0 | 197 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 265 | 1300 | | 332 | 1293 | | | 1352 | | | 1345 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.31 | 0.34 | | 0.05 | 0.41 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.3 | | 10.8 | 12.8 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.98 | 1.00 | | 1.14 | 0.99 | | | 0.99 | | | 0.80 | |
| Incremental Delay, d2 | 2.3 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.1 | 12.9 | | 12.4 | 13.1 | | | 10.7 | | | 8.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.1 | | | 13.1 | | | 10.7 | | | 8.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 454 | 73 | 94 | 455 | 284 | 48 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3073 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2028 | | | 2280 | | | 2771 | | | 2008 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 504 | 81 | 104 | 506 | 316 | 53 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 103 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 665 | 0 | 0 | 823 | 0 | 0 | 491 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 811 | | | 912 | | | 1271 | | | 618 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.36 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.82 | | | 0.90 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.4 | | | 18.3 | | | 12.0 | | | 20.3 | |
| Progression Factor | | 1.73 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 8.9 | | | 13.9 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 39.1 | | | 32.2 | | | 12.9 | | | 26.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 39.1 | | | 32.2 | | | 12.9 | | | 26.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 88.2% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 723 | 118 | 45 | 755 | 0 | 134 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2543 | | | 1311 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 803 | 131 | 50 | 839 | 0 | 149 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 916 | 0 | 0 | 889 | 0 | 0 | 206 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.16 | | | | | |
| v/c Ratio | 0.48 | | | 0.95 | | | 0.89 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.8 | | | 36.1 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.2 | | | 35.5 | | | | | |
| Delay (s) | 0.7 | | | 61.8 | | | 71.6 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.7 | | | 61.8 | | | 71.6 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.1 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.81 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.3% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 187 | 274 | 646 | 183 | 101 | 20 | 185 | 78 | 7 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1755 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 511 | 3020 | | 342 | 3257 | 1457 | | 1582 | | 685 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 208 | 304 | 718 | 203 | 112 | 22 | 206 | 87 | 8 | 83 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 75 | 0 | 0 | 0 | 45 |
| Lane Group Flow (vph) | 137 | 724 | 0 | 304 | 718 | 99 | 0 | 265 | 0 | 87 | 8 | 38 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Effective Green, g (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Actuated g/C Ratio | 0.45 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 333 | 1030 | | 383 | 1281 | 712 | | 362 | | 335 | 613 | 673 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.70 | | 0.79 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.7 | | 14.7 | 21.2 | 12.6 | | 32.1 | | 21.3 | 18.6 | 13.4 |
| Progression Factor | 1.90 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.6 | | 11.4 | 1.8 | 0.1 | | 7.9 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 30.2 | 44.3 | | 26.0 | 23.0 | 12.7 | | 40.1 | | 21.7 | 18.7 | 13.4 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.1 | | | 22.1 | | | 40.1 | | | 17.7 | |
| Approach LOS | | D | | | C | | | D | | | B | |













Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 30.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 90.0 | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | 74.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 518 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 576 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 |
| cM capacity (veh/h) | 961 | | | 973 | | | 19 | 184 | 700 | 231 | 184 | 692 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 288 | 288 | 274 | 203 | 393 | 36 | 636 | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | |
| cSH | 1700 | 1700 | 1700 | 973 | 1700 | 231 | 692 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | |
| Lane LOS | | | | A | | C | E | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | 40.6 | | | | | | |
| Approach LOS | | | | | | E | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | 12.9 | | | | | | | | | | | |
| Intersection Capacity Utilization | 59.7% | | | ICU Level of Service | | | | B | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | EBL | | NBL | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 550 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 611 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 306 | 306 | 597 | | | |
| Volume Left (vph) | 306 | 306 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 513 | 513 | 618 | | | |
| Control Delay (s) | 18.3 | 18.3 | 49.2 | | | |
| Approach Delay (s) | 18.3 | | 49.2 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

1/14/2013

















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 340 | 131 | 126 | 344 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3017 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.39 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3017 | | 645 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 378 | 146 | 140 | 382 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 476 | 0 | 140 | 382 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1278 | | 481 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.16 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.37 | | 0.29 | 0.21 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.8 | | 12.6 | 8.7 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.37 | 0.33 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | 1.4 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.6 | | 6.2 | 3.1 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.6 | | | 3.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 68 | 344 | 0 | 0 | 400 | 76 | 70 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4425 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 656 | 3257 | | | 3073 | | | 4425 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 382 | 0 | 0 | 444 | 84 | 78 | 72 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 382 | 0 | 0 | 510 | 0 | 0 | 165 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 485 | 1839 | | | 1265 | | | 1406 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.21 | | | 0.40 | | | 0.12 | | | | |
| Uniform Delay, d1 | 12.1 | 9.1 | | | 17.6 | | | 20.6 | | | | |
| Progression Factor | 0.41 | 0.42 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 5.7 | 4.1 | | | 18.6 | | | 20.7 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 4.3 | | | 18.6 | | | 20.7 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 82 | 31 | 243 | 31 | 129 | 85 | 52 | 56 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2939 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.88 | | | 0.73 | | | 0.89 | |
| Satd. Flow (perm) | | 2639 | | | 2628 | | | 1347 | | | 1565 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 341 | 91 | 34 | 270 | 34 | 143 | 94 | 58 | 62 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 443 | 0 | 0 | 325 | 0 | 0 | 281 | 0 | 0 | 255 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | | 930 | | | 663 | | | 770 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | | | 0.12 | | | c0.21 | | | 0.16 | |
| v/c Ratio | | 0.47 | | | 0.35 | | | 0.42 | | | 0.33 | |
| Uniform Delay, d1 | | 16.3 | | | 15.5 | | | 10.6 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.7 | | | 1.0 | | | 2.0 | | | 1.2 | |
| Delay (s) | | 18.0 | | | 16.5 | | | 12.6 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.0 | | | 16.5 | | | 12.6 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 66.8% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 202 | 82 | 205 | 176 | 62 | 81 | 1012 | 109 | 75 | 471 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 2954 | | 1593 | 3512 | | 1487 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.54 | 1.00 | | 0.40 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 2954 | | 901 | 3512 | | 626 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 86 | 216 | 185 | 65 | 85 | 1065 | 115 | 79 | 496 | 84 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 0 | 41 | 0 | 0 | 0 | 68 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 178 | 247 | 0 | 216 | 209 | 0 | 85 | 1065 | 47 | 79 | 496 | 33 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 973 | | 351 | 1157 | | 306 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.06 | | 0.01 | c0.35 | | c0.03 | 0.16 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.10 | | 0.03 | 0.21 | | 0.03 |
| v/c Ratio | 0.49 | 0.25 | | 0.62 | 0.18 | | 0.28 | 0.90 | 0.09 | 0.55 | 0.42 | 0.07 |
| Uniform Delay, d1 | 20.6 | 20.9 | | 22.0 | 20.3 | | 15.1 | 24.5 | 16.5 | 17.6 | 19.0 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.94 | 0.61 | 0.78 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 7.8 | 0.3 | | 2.2 | 11.2 | 0.3 | 13.0 | 1.0 | 0.2 |
| Delay (s) | 25.2 | 21.5 | | 29.8 | 20.7 | | 17.4 | 35.7 | 16.8 | 47.0 | 12.6 | 13.0 |
| Level of Service | C | C | | C | C | | B | D | B | D | B | B |
| Approach Delay (s) | | 22.9 | | | 24.9 | | | 32.8 | | | 16.8 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.2 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 49 | 284 | 18 | 14 | 328 | 8 | 35 | 113 | 25 | 20 | 57 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1928 | 1382 | | 1954 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.91 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1768 | 1382 | | 1924 | 1331 | | 1860 | 1452 | | 1811 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 299 | 19 | 15 | 345 | 8 | 37 | 119 | 26 | 21 | 60 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 0 | 351 | 9 | 0 | 360 | 4 | 0 | 156 | 11 | 0 | 81 | 37 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 816 | 638 | | 888 | 614 | | 773 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.19 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.03 |
| v/c Ratio | | 0.43 | 0.01 | | 0.41 | 0.01 | | 0.20 | 0.02 | | 0.11 | 0.06 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 11.6 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.47 | 0.45 | | 1.33 | 1.73 | | 0.96 | 0.93 |
| Incremental Delay, d2 | | 1.7 | 0.0 | | 1.3 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.2 |
| Delay (s) | | 13.4 | 9.5 | | 6.7 | 4.2 | | 16.7 | 19.4 | | 11.4 | 10.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.2 | | | 6.7 | | | 17.1 | | | 11.1 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 62.7% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 260 | 10 | 15 | 278 | 30 | 13 | 247 | 26 | 30 | 70 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3023 | | 1520 | 2996 | | 1520 | 2996 | | 1520 | 2823 | |
| Flt Permitted | 0.95 | 1.00 | | 0.57 | 1.00 | | 0.66 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3023 | | 910 | 2996 | | 1052 | 2996 | | 884 | 2823 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 289 | 11 | 17 | 309 | 33 | 14 | 274 | 29 | 33 | 78 | 71 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 296 | 0 | 17 | 329 | 0 | 14 | 291 | 0 | 33 | 107 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1488 | | 308 | 1014 | | 437 | 1244 | | 367 | 1173 | |
| v/s Ratio Prot | c0.05 | 0.10 | | | c0.11 | | | c0.10 | | | 0.04 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.04 | | |
| v/c Ratio | 0.51 | 0.20 | | 0.06 | 0.32 | | 0.03 | 0.23 | | 0.09 | 0.09 | |
| Uniform Delay, d1 | 27.4 | 9.3 | | 14.5 | 16.0 | | 11.3 | 12.3 | | 11.5 | 11.5 | |
| Progression Factor | 0.90 | 0.38 | | 0.81 | 0.74 | | 0.61 | 0.65 | | 1.10 | 1.20 | |
| Incremental Delay, d2 | 10.3 | 0.3 | | 0.3 | 0.8 | | 0.1 | 0.4 | | 0.5 | 0.2 | |
| Delay (s) | 34.9 | 3.8 | | 12.1 | 12.7 | | 6.9 | 8.4 | | 13.2 | 14.0 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.5 | | | 12.6 | | | 8.3 | | | 13.8 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 38.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 41 | 268 | 16 | 97 | 277 | 43 | 26 | 286 | 20 | 25 | 143 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.99 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3014 | | 1520 | 2979 | | | 3215 | | | 3140 | |
| Flt Permitted | 0.54 | 1.00 | | 0.95 | 1.00 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | 862 | 3014 | | 1520 | 2979 | | | 2975 | | | 2822 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 298 | 18 | 108 | 308 | 48 | 29 | 318 | 22 | 28 | 159 | 47 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 19 | 0 | 0 | 7 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 46 | 309 | 0 | 108 | 337 | 0 | 0 | 362 | 0 | 0 | 205 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 265 | 927 | | 140 | 1329 | | | 1144 | | | 1085 | |
| v/s Ratio Prot | c0.10 | | | c0.07 | | | 0.11 | | | | | |
| v/s Ratio Perm | 0.05 | | | | | | c0.12 | | | 0.07 | | |
| v/c Ratio | 0.17 | 0.33 | | 0.77 | 0.25 | | | 0.32 | | | 0.19 | |
| Uniform Delay, d1 | 16.5 | 17.4 | | 28.8 | 11.2 | | | 14.0 | | | 13.3 | |
| Progression Factor | 0.59 | 0.58 | | 1.31 | 1.02 | | | 0.72 | | | 0.75 | |
| Incremental Delay, d2 | 1.4 | 1.0 | | 27.7 | 0.4 | | | 0.7 | | | 0.4 | |
| Delay (s) | 11.1 | 11.0 | | 65.5 | 11.8 | | | 10.8 | | | 10.3 | |
| Level of Service | B | B | | E | B | | | B | | | B | |
| Approach Delay (s) | 11.0 | | | 24.3 | | | 10.8 | | | 10.3 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.2 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 43.5% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

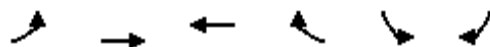
1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 277 | 16 | 70 | 382 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1560 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1545 | | | 1436 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 16 | 308 | 18 | 78 | 424 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 340 | 0 | 0 | 573 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 996 | | | 926 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.40 | | | 0.06 | | | | |
| v/c Ratio | | 0.34 | | | 0.62 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.3 | | | 6.8 | | | 20.3 | | | | |
| Progression Factor | | 2.02 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 3.1 | | | 0.8 | | | | |
| Delay (s) | | 11.5 | | | 9.9 | | | 21.1 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 11.5 | | | 9.9 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 66.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

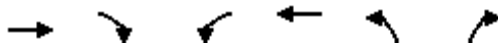


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 85 | 354 | 427 | 44 | 66 | 92 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 89 | 373 | 449 | 46 | 69 | 97 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.86 | | | | 0.86 | 0.86 |
| vC, conflicting volume | 517 | | | | 1050 | 497 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 353 | | | | 975 | 329 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 91 | | | | 67 | 84 |
| cM capacity (veh/h) | 973 | | | | 213 | 599 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 462 | 496 | 69 | 97 | | |
| Volume Left | 89 | 0 | 69 | 0 | | |
| Volume Right | 0 | 46 | 0 | 97 | | |
| cSH | 973 | 1700 | 213 | 599 | | |
| Volume to Capacity | 0.09 | 0.29 | 0.33 | 0.16 | | |
| Queue Length 95th (ft) | 8 | 0 | 34 | 14 | | |
| Control Delay (s) | 2.6 | 0.0 | 29.9 | 12.2 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.6 | 0.0 | 19.6 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.0 | | | |
| Intersection Capacity Utilization | | | 66.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|-------|------|----------------------|------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | 👉 |
| Volume (vph) | 473 | 1 | 27 | 675 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 1711 | | |
| Flt Permitted | 1.00 | | | 0.97 | | |
| Satd. Flow (perm) | 1714 | | | 1661 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 526 | 1 | 30 | 750 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 527 | 0 | 0 | 780 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | | |
| Effective Green, g (s) | 59.0 | | | 31.0 | | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1190 | | | 606 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.47 | | |
| v/c Ratio | 0.44 | | | 1.29 | | |
| Uniform Delay, d1 | 5.7 | | | 27.0 | | |
| Progression Factor | 0.06 | | | 1.00 | | |
| Incremental Delay, d2 | 0.1 | | | 141.4 | | |
| Delay (s) | 0.5 | | | 168.4 | | |
| Level of Service | A | | | F | | |
| Approach Delay (s) | 0.5 | | | 168.4 | 0.0 | |
| Approach LOS | A | | | F | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 100.7 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 0.87 | | | | |
| Actuated Cycle Length (s) | | 85.0 | | Sum of lost time (s) | | 25.0 |
| Intersection Capacity Utilization | | 63.9% | | ICU Level of Service | | B |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 185 | 193 | 25 | 561 | 0 | 0 | 0 | 0 | 3 | 0 | 263 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 206 | 214 | 28 | 623 | 0 | 0 | 0 | 0 | 3 | 0 | 292 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 623 | | | 206 | | | 992 | 992 | 210 | 782 | 884 | 623 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 623 | | | 206 | | | 992 | 992 | 210 | 782 | 884 | 623 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 31 |
| cM capacity (veh/h) | 968 | | | 984 | | | 62 | 241 | 802 | 282 | 278 | 424 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 137 | 283 | 651 | 3 | 292 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 214 | 0 | 0 | 292 | | | | | | | |
| cSH | 1700 | 1700 | 984 | 282 | 424 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.69 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 127 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.9 | 30.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 30.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.9% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | 🚗🚗 | | 🚗 | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 188 | 0 | 586 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 209 | 0 | 651 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 651 | | | |
| Volume Left (vph) | 104 | 104 | 651 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.88 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 32.2 | | | |
| Approach Delay (s) | 10.3 | | 32.2 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 26.9 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 650 | 210 | 172 | 519 | 0 | 0 | 0 | 0 | 208 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3704 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3704 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 684 | 221 | 181 | 546 | 0 | 0 | 0 | 0 | 219 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 92 |
| Lane Group Flow (vph) | 0 | 684 | 114 | 0 | 727 | 0 | 0 | 0 | 0 | 120 | 299 | 66 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.1 | 39.1 | | 68.1 | | | | | 22.1 | 22.1 | 67.2 |
| Effective Green, g (s) | | 39.1 | 39.1 | | 68.1 | | | | | 22.1 | 22.1 | 67.2 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.43 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 728 | 294 | | 1435 | | | | | 186 | 512 | 471 |
| v/s Ratio Prot | | c0.23 | | | c0.22 | | | | | c0.09 | 0.08 | |
| v/s Ratio Perm | | | 0.09 | | | | | | | | | 0.06 |
| v/c Ratio | | 0.94 | 0.39 | | 0.51 | | | | | 0.65 | 0.58 | 0.14 |
| Uniform Delay, d1 | | 59.3 | 50.4 | | 33.6 | | | | | 65.2 | 64.6 | 28.6 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 21.5 | 3.8 | | 0.1 | | | | | 7.5 | 1.7 | 0.1 |
| Delay (s) | | 80.8 | 54.3 | | 0.7 | | | | | 72.7 | 66.3 | 28.7 |
| Level of Service | | F | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 74.3 | | | 0.7 | | | 0.0 | | | 58.5 | |
| Approach LOS | | E | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 46.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.7 | | |
| Intersection Capacity Utilization | | | 61.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 646 | 0 | 0 | 453 | 112 | 238 | 150 | 195 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.92 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2963 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2963 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 718 | 0 | 0 | 503 | 124 | 264 | 167 | 217 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 88 | 0 | 117 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 718 | 0 | 0 | 503 | 36 | 222 | 309 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | Perm | | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 83.9 | 83.9 | | | 33.7 | 33.7 | 15.5 | 15.5 | | | | |
| Effective Green, g (s) | 83.9 | 83.9 | | | 33.7 | 33.7 | 15.5 | 15.5 | | | | |
| Actuated g/C Ratio | 0.52 | 0.52 | | | 0.21 | 0.21 | 0.10 | 0.10 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 825 | 1765 | | | 663 | 307 | 148 | 287 | | | | |
| v/s Ratio Prot | 0.15 | c0.21 | | | c0.16 | | c0.14 | 0.10 | | | | |
| v/s Ratio Perm | | | | | | 0.02 | | | | | | |
| v/c Ratio | 0.29 | 0.41 | | | 0.76 | 0.12 | 1.50 | 1.08 | | | | |
| Uniform Delay, d1 | 21.3 | 23.0 | | | 59.3 | 51.1 | 72.2 | 72.2 | | | | |
| Progression Factor | 0.07 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 5.0 | 0.2 | 256.9 | 75.6 | | | | |
| Delay (s) | 1.6 | 1.5 | | | 64.3 | 51.3 | 329.2 | 147.8 | | | | |
| Level of Service | A | A | | | E | D | F | F | | | | |
| Approach Delay (s) | | 1.5 | | | 61.7 | | 209.9 | | | | 0.0 | |
| Approach LOS | | A | | | E | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 79.1 | | | HCM Level of Service | | E | | | | |
| HCM Volume to Capacity ratio | | | 0.63 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | 28.9 | | | | |
| Intersection Capacity Utilization | | | 52.8% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 326 | 75 | 35 | 356 | 45 | 88 | 824 | 62 | 59 | 749 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1546 | 1556 | 1328 | 1595 | 1760 | | 1532 | 2990 | | 1509 | 2919 | |
| Flt Permitted | 0.23 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.17 | 1.00 | | 0.15 | 1.00 | |
| Satd. Flow (perm) | 374 | 1556 | 1328 | 703 | 1760 | | 267 | 2990 | | 238 | 2919 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 343 | 79 | 37 | 375 | 47 | 93 | 867 | 65 | 62 | 788 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 232 | 343 | 27 | 37 | 417 | 0 | 93 | 926 | 0 | 62 | 885 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 229 | 557 | 461 | 268 | 554 | | 175 | 1134 | | 163 | 1107 | |
| v/s Ratio Prot | c0.07 | 0.22 | | 0.00 | 0.24 | | c0.03 | c0.31 | | 0.02 | 0.30 | |
| v/s Ratio Perm | c0.34 | | 0.02 | 0.04 | | | 0.20 | | | 0.14 | | |
| v/c Ratio | 1.01 | 0.62 | 0.06 | 0.14 | 0.75 | | 0.53 | 0.82 | | 0.38 | 0.80 | |
| Uniform Delay, d1 | 26.3 | 23.8 | 19.6 | 20.4 | 27.7 | | 17.9 | 25.1 | | 17.7 | 24.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 62.9 | 5.0 | 0.2 | 0.2 | 9.2 | | 3.1 | 6.5 | | 1.5 | 6.1 | |
| Delay (s) | 89.2 | 28.8 | 19.8 | 20.7 | 36.8 | | 21.0 | 31.6 | | 19.2 | 30.9 | |
| Level of Service | F | C | B | C | D | | C | C | | B | C | |
| Approach Delay (s) | | 49.1 | | | 35.5 | | | 30.7 | | | 30.2 | |
| Approach LOS | | D | | | D | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.1 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 82.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 54 | 301 | 26 | 5 | 311 | 19 | 78 | 80 | 16 | 11 | 44 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | | | 0.92 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 1.00 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1904 | | | 1792 | |
| Flt Permitted | | 0.91 | 1.00 | | 1.00 | 1.00 | | 0.83 | | | 0.98 | |
| Satd. Flow (perm) | | 1761 | 1482 | | 1595 | 1198 | | 1624 | | | 1762 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 317 | 27 | 5 | 327 | 20 | 82 | 84 | 17 | 12 | 46 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 10 | 0 | 6 | 0 | 0 | 50 | 0 |
| Lane Group Flow (vph) | 0 | 374 | 13 | 0 | 332 | 10 | 0 | 177 | 0 | 0 | 94 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 867 | 730 | | 785 | 590 | | 675 | | | 732 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | 0.01 | | 0.21 | 0.01 | | c0.11 | | | 0.05 | |
| v/c Ratio | | 0.43 | 0.02 | | 0.42 | 0.02 | | 0.26 | | | 0.13 | |
| Uniform Delay, d1 | | 10.6 | 8.5 | | 10.6 | 8.4 | | 12.5 | | | 11.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.67 | 2.20 | | 1.00 | | | 1.51 | |
| Incremental Delay, d2 | | 1.6 | 0.0 | | 1.6 | 0.0 | | 0.9 | | | 0.4 | |
| Delay (s) | | 12.2 | 8.5 | | 19.2 | 18.6 | | 13.4 | | | 18.1 | |
| Level of Service | | B | A | | B | B | | B | | | B | |
| Approach Delay (s) | | 12.0 | | | 19.2 | | | 13.4 | | | 18.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.4 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 77.4% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|------|----------------------|-------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 86 | 219 | 35 | 6 | 176 | 6 | 84 | 228 | 22 | 9 | 53 | 73 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.93 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1664 | 1392 | | 1608 | 1497 | | 1734 | 1390 | | 1571 | |
| Flt Permitted | | 0.85 | 1.00 | | 0.99 | 1.00 | | 0.88 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1439 | 1392 | | 1592 | 1497 | | 1553 | 1390 | | 1541 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 91 | 231 | 37 | 6 | 185 | 6 | 88 | 240 | 23 | 9 | 56 | 77 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 4 | 0 | 0 | 12 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 0 | 322 | 13 | 0 | 191 | 2 | 0 | 328 | 11 | 0 | 103 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 509 | 493 | | 563 | 530 | | 765 | 684 | | 759 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.22 | 0.01 | | 0.12 | 0.00 | | c0.21 | 0.01 | | 0.07 | |
| v/c Ratio | | 0.63 | 0.03 | | 0.34 | 0.00 | | 0.43 | 0.02 | | 0.14 | |
| Uniform Delay, d1 | | 17.5 | 13.7 | | 15.4 | 13.6 | | 10.6 | 8.4 | | 9.0 | |
| Progression Factor | | 1.87 | 3.33 | | 0.95 | 0.97 | | 0.27 | 0.18 | | 1.14 | |
| Incremental Delay, d2 | | 5.5 | 0.1 | | 1.6 | 0.0 | | 0.8 | 0.0 | | 0.4 | |
| Delay (s) | | 38.3 | 45.7 | | 16.3 | 13.2 | | 3.7 | 1.6 | | 10.6 | |
| Level of Service | | D | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 39.0 | | | 16.2 | | | 3.6 | | | 10.6 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 78.1% | | | | ICU Level of Service | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 166 | 23 | 35 | 9 | 27 | 6 | 43 | 286 | 19 | 6 | 201 | 115 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.98 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1772 | 1390 | | 1835 | | | 1970 | | | 1873 | 1328 |
| Flt Permitted | | 0.79 | 1.00 | | 0.94 | | | 0.95 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1466 | 1390 | | 1749 | | | 1874 | | | 1858 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 184 | 26 | 39 | 10 | 30 | 7 | 48 | 318 | 21 | 7 | 223 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 23 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 65 |
| Lane Group Flow (vph) | 0 | 210 | 16 | 0 | 42 | 0 | 0 | 384 | 0 | 0 | 230 | 63 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 647 | 577 | | 457 | | | 923 | | | 915 | 654 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.09 | 0.01 | | 0.02 | | | c0.20 | | | 0.12 | 0.05 |
| v/c Ratio | | 0.32 | 0.03 | | 0.09 | | | 0.42 | | | 0.25 | 0.10 |
| Uniform Delay, d1 | | 12.8 | 11.2 | | 18.2 | | | 10.5 | | | 9.6 | 8.8 |
| Progression Factor | | 0.85 | 1.52 | | 1.00 | | | 0.43 | | | 0.53 | 0.31 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.4 | | | 1.1 | | | 0.6 | 0.3 |
| Delay (s) | | 12.1 | 17.1 | | 18.6 | | | 5.6 | | | 5.7 | 3.0 |
| Level of Service | | B | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 12.9 | | | 18.6 | | | 5.6 | | | 4.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.6 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 60.7% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| |  | | | | | | | | | | | |
|-----------------------------------|--|------|--------|-------|------|----------------------|------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↔ | ↑↑ | | | | | ↔ | ↑↑ | ↔ |
| Volume (vph) | 0 | 990 | 222 | 333 | 1149 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 1589 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.12 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 204 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1042 | 234 | 351 | 1209 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | 59 |
| Lane Group Flow (vph) | 0 | 1244 | 0 | 351 | 1209 | 0 | 0 | 0 | 0 | 234 | 394 | 151 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 44.3 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Effective Green, g (s) | | 44.3 | | 69.3 | 69.3 | | | | | 23.7 | 23.7 | 23.7 |
| Actuated g/C Ratio | | 0.42 | | 0.66 | 0.66 | | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1823 | | 405 | 2129 | | | | | 320 | 612 | 306 |
| v/s Ratio Prot | | 0.29 | | c0.17 | 0.37 | | | | | | | |
| v/s Ratio Perm | | | | c0.40 | | | | | | c0.16 | 0.15 | 0.11 |
| v/c Ratio | | 0.68 | | 0.87 | 0.57 | | | | | 0.73 | 0.64 | 0.49 |
| Uniform Delay, d1 | | 24.6 | | 24.7 | 9.7 | | | | | 37.7 | 36.8 | 35.4 |
| Progression Factor | | 1.00 | | 0.90 | 1.67 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.1 | | 9.0 | 0.5 | | | | | 8.6 | 2.4 | 1.5 |
| Delay (s) | | 26.7 | | 31.1 | 16.7 | | | | | 46.3 | 39.3 | 36.9 |
| Level of Service | | C | | C | B | | | | | D | D | D |
| Approach Delay (s) | | 26.7 | | | 19.9 | | | 0.0 | | | 40.5 | |
| Approach LOS | | C | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.2 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 109.9% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 311 | 954 | 0 | 0 | 933 | 234 | 549 | 365 | 681 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 2915 | 3138 | | | 4350 | | | 4339 | | | | |
| Flt Permitted | 0.13 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 407 | 3138 | | | 4350 | | | 4339 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 1004 | 0 | 0 | 982 | 246 | 578 | 384 | 717 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 36 | 0 | 0 | 89 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 1004 | 0 | 0 | 1192 | 0 | 0 | 1590 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | | 8 | | | | | |
| Actuated Green, G (s) | 63.6 | 63.6 | | | 45.4 | | | 29.4 | | | | |
| Effective Green, g (s) | 63.6 | 63.6 | | | 45.4 | | | 29.4 | | | | |
| Actuated g/C Ratio | 0.61 | 0.61 | | | 0.43 | | | 0.28 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 538 | 1901 | | | 1881 | | | 1215 | | | | |
| v/s Ratio Prot | 0.07 | c0.32 | | | 0.27 | | | | | | | |
| v/s Ratio Perm | c0.30 | | | | | | | 0.37 | | | | |
| v/c Ratio | 0.61 | 0.53 | | | 0.63 | | | 1.42dr | | | | |
| Uniform Delay, d1 | 12.9 | 12.0 | | | 23.3 | | | 37.8 | | | | |
| Progression Factor | 0.60 | 0.60 | | | 1.02 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.5 | 0.8 | | | 0.9 | | | 144.8 | | | | |
| Delay (s) | 9.3 | 8.0 | | | 24.6 | | | 182.6 | | | | |
| Level of Service | A | A | | | C | | | F | | | | |
| Approach Delay (s) | | 8.3 | | | 24.6 | | | 182.6 | | | 0.0 | |
| Approach LOS | | A | | | C | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 82.1 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 109.9% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 105 | 941 | 226 | 78 | 874 | 51 | 226 | 178 | 40 | 76 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1604 | 3231 | | 1446 | 3007 | | 1544 | 2782 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.29 | 1.00 | | 0.55 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 175 | 3061 | 1291 | 488 | 3231 | | 841 | 3007 | | 990 | 2782 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 991 | 238 | 82 | 920 | 54 | 238 | 187 | 42 | 80 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 98 | 0 | 4 | 0 | 0 | 21 | 0 | 0 | 80 | 0 |
| Lane Group Flow (vph) | 111 | 991 | 140 | 82 | 970 | 0 | 238 | 208 | 0 | 80 | 133 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 62.7 | 52.6 | 61.7 | 40.8 | 34.2 | | 28.9 | 19.8 | | 24.7 | 17.7 | |
| Effective Green, g (s) | 62.7 | 52.6 | 61.7 | 40.8 | 34.2 | | 28.9 | 19.8 | | 24.7 | 17.7 | |
| Actuated g/C Ratio | 0.60 | 0.50 | 0.59 | 0.39 | 0.33 | | 0.28 | 0.19 | | 0.24 | 0.17 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 435 | 1533 | 759 | 260 | 1052 | | 284 | 567 | | 270 | 469 | |
| v/s Ratio Prot | 0.06 | c0.32 | 0.02 | c0.02 | c0.30 | | c0.07 | 0.07 | | 0.02 | 0.05 | |
| v/s Ratio Perm | 0.09 | | 0.09 | 0.10 | | | c0.16 | | | 0.05 | | |
| v/c Ratio | 0.26 | 0.65 | 0.18 | 0.32 | 0.92 | | 0.84 | 0.37 | | 0.30 | 0.28 | |
| Uniform Delay, d1 | 13.1 | 19.3 | 10.0 | 20.7 | 34.1 | | 34.4 | 37.1 | | 32.4 | 38.1 | |
| Progression Factor | 1.04 | 1.20 | 2.56 | 1.00 | 1.00 | | 0.96 | 0.90 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.7 | 1.1 | 0.1 | 0.7 | 14.4 | | 18.0 | 1.3 | | 0.6 | 1.2 | |
| Delay (s) | 14.3 | 24.2 | 25.7 | 21.4 | 48.5 | | 51.0 | 34.9 | | 33.0 | 39.3 | |
| Level of Service | B | C | C | C | D | | D | C | | C | D | |
| Approach Delay (s) | | 23.6 | | | 46.4 | | | 43.1 | | | 37.6 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 22.5 | | | |
| Intersection Capacity Utilization | | | 76.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 329 | 286 | 81 | 215 | 102 | 329 | 382 | 161 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2916 | | 1463 | 3047 | | 1589 | 3174 | | 1549 | 3135 | |
| Flt Permitted | 0.52 | 1.00 | | 0.23 | 1.00 | | 0.46 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 888 | 2916 | | 359 | 3047 | | 772 | 3174 | | 713 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 346 | 301 | 85 | 226 | 107 | 346 | 402 | 169 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 144 | 0 | 0 | 52 | 0 | 0 | 43 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 503 | 0 | 85 | 281 | 0 | 346 | 528 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 349 | 789 | | 202 | 836 | | 530 | 1267 | | 320 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.03 | 0.09 | | c0.11 | 0.17 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.12 | | | c0.22 | | | 0.09 | | |
| v/c Ratio | 0.19 | 0.64 | | 0.42 | 0.34 | | 0.65 | 0.42 | | 0.30 | 0.33 | |
| Uniform Delay, d1 | 24.0 | 33.8 | | 24.8 | 30.5 | | 16.6 | 22.7 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.04 | 0.90 | |
| Incremental Delay, d2 | 0.3 | 3.9 | | 1.7 | 1.1 | | 3.0 | 1.0 | | 0.6 | 0.9 | |
| Delay (s) | 24.3 | 37.7 | | 26.4 | 31.6 | | 19.6 | 23.8 | | 23.8 | 26.8 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 36.4 | | | 30.5 | | | 22.2 | | | 26.2 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | | | 73.3% | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 169 | 402 | 612 | 6 | 409 | 110 | 201 | 617 | 7 | 84 | 385 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.92 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2588 | | | 2888 | | 1437 | 3187 | | 1451 | 2799 | |
| Flt Permitted | | 0.62 | | | 0.93 | | 0.36 | 1.00 | | 0.27 | 1.00 | |
| Satd. Flow (perm) | | 1620 | | | 2690 | | 550 | 3187 | | 405 | 2799 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 447 | 680 | 7 | 454 | 122 | 223 | 686 | 8 | 93 | 428 | 117 |
| RTOR Reduction (vph) | 0 | 193 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 38 | 0 |
| Lane Group Flow (vph) | 0 | 1122 | 0 | 0 | 546 | 0 | 223 | 693 | 0 | 93 | 507 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Effective Green, g (s) | | 27.0 | | | 19.0 | | 26.0 | 22.0 | | 26.0 | 22.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.29 | | 0.40 | 0.34 | | 0.40 | 0.34 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 732 | | | 786 | | 275 | 1079 | | 226 | 947 | |
| v/s Ratio Prot | | c0.09 | | | | | c0.05 | 0.22 | | 0.03 | 0.18 | |
| v/s Ratio Perm | | c0.54 | | | 0.20 | | c0.27 | | | 0.14 | | |
| v/c Ratio | | 1.53 | | | 0.69 | | 0.81 | 0.64 | | 0.41 | 0.53 | |
| Uniform Delay, d1 | | 19.0 | | | 20.4 | | 16.4 | 18.2 | | 12.9 | 17.4 | |
| Progression Factor | | 1.00 | | | 1.51 | | 1.14 | 1.01 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 246.7 | | | 0.5 | | 17.1 | 2.2 | | 5.5 | 2.2 | |
| Delay (s) | | 265.7 | | | 31.3 | | 35.7 | 20.5 | | 18.4 | 19.5 | |
| Level of Service | | F | | | C | | D | C | | B | B | |
| Approach Delay (s) | | 265.7 | | | 31.3 | | | 24.2 | | | 19.4 | |
| Approach LOS | | F | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 116.5 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.16 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 94.4% | | | ICU Level of Service | | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 117 | 343 | 858 | 132 | 13 | 112 | 809 | 278 | 10 | 968 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.89 | | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1665 | 1695 | | 1620 | 1939 | | 1659 | 3110 | | 1139 | 3232 | |
| Flt Permitted | 0.66 | 1.00 | | 0.29 | 1.00 | | 0.19 | 1.00 | | 0.16 | 1.00 | |
| Satd. Flow (perm) | 1161 | 1695 | | 499 | 1939 | | 326 | 3110 | | 191 | 3232 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 121 | 354 | 885 | 136 | 13 | 115 | 834 | 287 | 10 | 998 | 46 |
| RTOR Reduction (vph) | 0 | 41 | 0 | 0 | 5 | 0 | 0 | 52 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 54 | 434 | 0 | 885 | 144 | 0 | 115 | 1069 | 0 | 10 | 1039 | 0 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 429 | 626 | | 184 | 716 | | 155 | 1483 | | 91 | 1541 | |
| v/s Ratio Prot | | 0.26 | | | 0.07 | | | 0.34 | | | 0.32 | |
| v/s Ratio Perm | 0.05 | | | c1.77 | | | c0.35 | | | 0.05 | | |
| v/c Ratio | 0.13 | 0.69 | | 4.81 | 0.20 | | 0.74 | 0.72 | | 0.11 | 0.67 | |
| Uniform Delay, d1 | 13.6 | 17.4 | | 20.5 | 14.0 | | 13.8 | 13.5 | | 9.4 | 13.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.73 | 1.92 | | 1.00 | 1.00 | | 0.98 | 0.96 | |
| Incremental Delay, d2 | 0.6 | 6.2 | | 1715.5 | 0.1 | | 27.1 | 3.1 | | 0.2 | 0.2 | |
| Delay (s) | 14.2 | 23.6 | | 1751.0 | 26.8 | | 40.8 | 16.6 | | 9.5 | 12.8 | |
| Level of Service | B | C | | F | C | | D | B | | A | B | |
| Approach Delay (s) | | 22.6 | | | 1502.5 | | | 18.9 | | | 12.7 | |
| Approach LOS | | C | | | F | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 415.9 | | | HCM Level of Service | | | F | | | | | |
| HCM Volume to Capacity ratio | 2.51 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | 133.3% | | | ICU Level of Service | | | H | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| | → | ↖ | ← | ↗ | ↘ | ↙ | ↑ | ↗ | ↘ | ↓ | ↙ | ↘ |
|---|--------|------|--------|------|------|------|----------------------|------|------|------|------|------|
| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
| Lane Configurations | ↔ | | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 427 | 952 | 570 | 14 | 3 | 14 | 3 | 47 | 10 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Util. Factor | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 0.99 | | |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | | 1.00 | | | | 0.91 | | | 0.95 | | |
| Flt Protected | 1.00 | | 0.97 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | | 2880 | | | | 1732 | | | 1864 | | |
| Flt Permitted | 1.00 | | 0.59 | | | | 0.94 | | | 0.87 | | |
| Satd. Flow (perm) | 2956 | | 1742 | | | | 1650 | | | 1671 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 449 | 1002 | 600 | 15 | 3 | 15 | 3 | 49 | 11 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 0 | 38 | 0 | 0 | 3 | 0 | 0 |
| Lane Group Flow (vph) | 449 | 0 | 1616 | 0 | 0 | 0 | 32 | 0 | 0 | 14 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | custom | | | Perm | | | | Perm | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 7 | | | | 2 | | | 6 | | | |
| Actuated Green, G (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Effective Green, g (s) | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | | |
| Actuated g/C Ratio | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | | |
| Clearance Time (s) | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 819 | | 829 | | | | 355 | | | 360 | | |
| v/s Ratio Prot | 0.15 | | c0.18 | | | | | | | | | |
| v/s Ratio Perm | | | c0.63 | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.55 | | 3.37dl | | | | 0.09 | | | 0.04 | | |
| Uniform Delay, d1 | 20.0 | | 19.0 | | | | 20.4 | | | 20.2 | | |
| Progression Factor | 1.22 | | 0.66 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 0.2 | | 430.0 | | | | 0.5 | | | 0.2 | | |
| Delay (s) | 24.8 | | 442.6 | | | | 20.9 | | | 20.4 | | |
| Level of Service | C | | F | | | | C | | | C | | |
| Approach Delay (s) | 24.8 | | 442.6 | | | | 20.9 | | | 20.4 | | |
| Approach LOS | C | | F | | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 366.7 | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | | 1.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 14.0 | | |
| Intersection Capacity Utilization | | | 125.7% | | | | ICU Level of Service | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | NEL | NER |
|------------------------|-------|------|
| Lane Configurations | | |
| Volume (vph) | 1 | 421 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | 5.0 | |
| Lane Util. Factor | 1.00 | |
| Frpb, ped/bikes | 1.00 | |
| Flpb, ped/bikes | 1.00 | |
| Frt | 0.87 | |
| Flt Protected | 1.00 | |
| Satd. Flow (prot) | 1429 | |
| Flt Permitted | 1.00 | |
| Satd. Flow (perm) | 1429 | |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 1 | 443 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 444 | 0 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 9% |
| Turn Type | | |
| Protected Phases | 3 | |
| Permitted Phases | | |
| Actuated Green, G (s) | 10.0 | |
| Effective Green, g (s) | 10.0 | |
| Actuated g/C Ratio | 0.15 | |
| Clearance Time (s) | 5.0 | |
| Lane Grp Cap (vph) | 220 | |
| v/s Ratio Prot | c0.31 | |
| v/s Ratio Perm | | |
| v/c Ratio | 2.02 | |
| Uniform Delay, d1 | 27.5 | |
| Progression Factor | 1.24 | |
| Incremental Delay, d2 | 469.8 | |
| Delay (s) | 503.8 | |
| Level of Service | F | |
| Approach Delay (s) | 503.8 | |
| Approach LOS | F | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|--------|------|------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 214 | 758 | 1303 | 66 | 41 | 235 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3222 | 3234 | | 1629 | 1457 |
| Flt Permitted | | 0.51 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 1673 | 3234 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 238 | 842 | 1448 | 73 | 46 | 261 |
| RTOR Reduction (vph) | 0 | 0 | 5 | 0 | 0 | 34 |
| Lane Group Flow (vph) | 0 | 1080 | 1516 | 0 | 46 | 227 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1030 | 1990 | | 426 | 381 |
| v/s Ratio Prot | | | 0.47 | | 0.03 | |
| v/s Ratio Perm | | c0.65 | | | | c0.16 |
| v/c Ratio | | 2.20dl | 0.76 | | 0.11 | 0.60 |
| Uniform Delay, d1 | | 12.5 | 9.0 | | 18.2 | 21.0 |
| Progression Factor | | 1.77 | 0.87 | | 0.99 | 0.97 |
| Incremental Delay, d2 | | 24.8 | 1.6 | | 0.5 | 6.7 |
| Delay (s) | | 46.9 | 9.5 | | 18.6 | 27.1 |
| Level of Service | | D | A | | B | C |
| Approach Delay (s) | | 46.9 | 9.5 | | 25.8 | |
| Approach LOS | | D | A | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|-----|
| HCM Average Control Delay | 25.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.91 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 82.2% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013

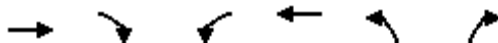


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 58 | 714 | 1287 | 196 | 135 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2977 | | 1464 | 1373 |
| Flt Permitted | | 0.70 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2068 | 2977 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 61 | 752 | 1355 | 206 | 142 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 19 | 0 | 0 | 34 |
| Lane Group Flow (vph) | 0 | 813 | 1542 | 0 | 142 | 46 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1209 | 1740 | | 428 | 401 |
| v/s Ratio Prot | | | c0.52 | | c0.10 | |
| v/s Ratio Perm | | 0.39 | | | | 0.03 |
| v/c Ratio | | 0.67 | 0.89 | | 0.33 | 0.11 |
| Uniform Delay, d1 | | 9.2 | 11.6 | | 18.0 | 16.8 |
| Progression Factor | | 0.92 | 1.02 | | 0.96 | 1.05 |
| Incremental Delay, d2 | | 0.3 | 2.0 | | 2.0 | 0.6 |
| Delay (s) | | 8.7 | 13.9 | | 19.3 | 18.2 |
| Level of Service | | A | B | | B | B |
| Approach Delay (s) | | 8.7 | 13.9 | | 18.9 | |
| Approach LOS | | A | B | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 12.7 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.70 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 82.2% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave

1/14/2013

























| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|-------|----------------------|------|
| Lane Configurations | ↩ | | ↩ | ↩ | ↩ | |
| Volume (vph) | 686 | 175 | 107 | 1182 | 482 | 83 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.98 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2222 | | 1770 | 2436 | 1820 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2222 | | 240 | 2436 | 1820 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 700 | 179 | 109 | 1206 | 492 | 85 |
| RTOR Reduction (vph) | 14 | 0 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 865 | 0 | 109 | 1206 | 568 | 0 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1060 | | 114 | 1162 | 672 | |
| v/s Ratio Prot | 0.39 | | | c0.50 | c0.31 | |
| v/s Ratio Perm | | | 0.45 | | | |
| v/c Ratio | 0.82 | | 0.96 | 1.04 | 0.84 | |
| Uniform Delay, d1 | 14.6 | | 16.3 | 17.0 | 18.8 | |
| Progression Factor | 1.51 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.5 | | 73.1 | 36.7 | 12.4 | |
| Delay (s) | 27.6 | | 89.5 | 53.7 | 31.2 | |
| Level of Service | C | | F | D | C | |
| Approach Delay (s) | 27.6 | | | 56.7 | 31.2 | |
| Approach LOS | C | | | E | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 42.1 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.95 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 93.4% | | ICU Level of Service | F |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 738 | 99 | 258 | 1220 | 9 | 111 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.20 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.61 | |
| Satd. Flow (perm) | 397 | 3213 | 1422 | 430 | 3138 | 1366 | | 1309 | 1443 | | 626 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 820 | 110 | 287 | 1356 | 10 | 123 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 0 | 3 | 0 | 0 | 175 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 820 | 57 | 287 | 1356 | 7 | 0 | 123 | 33 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 44.4 | 44.4 | 44.4 | 63.7 | 63.7 | 63.7 | | 13.3 | 13.3 | | 13.3 | |
| Effective Green, g (s) | 44.4 | 44.4 | 44.4 | 63.7 | 63.7 | 63.7 | | 13.3 | 13.3 | | 13.3 | |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.75 | 0.75 | 0.75 | | 0.16 | 0.16 | | 0.16 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 207 | 1678 | 743 | 545 | 2352 | 1024 | | 205 | 226 | | 98 | |
| v/s Ratio Prot | | 0.26 | | 0.10 | c0.43 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.29 | | 0.01 | | c0.09 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.49 | 0.08 | 0.53 | 0.58 | 0.01 | | 0.60 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.7 | 13.0 | 10.1 | 4.9 | 4.7 | 2.7 | | 33.4 | 30.9 | | 30.3 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 1.0 | 0.2 | 0.9 | 0.3 | 0.0 | | 4.7 | 0.3 | | 0.0 | |
| Delay (s) | 9.8 | 14.0 | 10.3 | 5.8 | 5.0 | 2.7 | | 38.0 | 31.2 | | 30.3 | |
| Level of Service | A | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 13.6 | | | 5.2 | | | 33.8 | | | 30.3 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 817 | 844 | 45 | 24 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1487 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2835 | 3017 | | 1487 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 908 | 938 | 50 | 27 | 10 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 922 | 984 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1040 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.7 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.1 | 0.2 | | 4.8 | |
| Delay (s) | | 37.9 | 0.3 | | 43.8 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 37.9 | 0.3 | | 43.8 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 18.9 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 44.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 79 | 431 | 1 | 27 | 568 | 80 | 0 | 0 | 1 | 45 | 3 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1729 | | | 3231 | | | 1432 | | | 1610 | 1282 |
| Flt Permitted | | 0.79 | | | 0.93 | | | 1.00 | | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1375 | | | 3021 | | | 1432 | | | 1569 | 1282 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 88 | 479 | 1 | 30 | 631 | 89 | 0 | 0 | 1 | 50 | 3 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 70 |
| Lane Group Flow (vph) | 0 | 568 | 0 | 0 | 738 | 0 | 0 | 0 | 0 | 0 | 53 | 34 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 501 | | | 1634 | | | 152 | | | 469 | 422 |
| v/s Ratio Prot | | | | | 0.07 | | | 0.00 | | | 0.02 | |
| v/s Ratio Perm | | 0.41 | | | 0.16 | | | | | | 0.01 | 0.03 |
| v/c Ratio | | 1.13 | | | 0.45 | | | 0.00 | | | 0.11 | 0.08 |
| Uniform Delay, d1 | | 27.0 | | | 12.4 | | | 34.0 | | | 21.9 | 19.6 |
| Progression Factor | | 1.00 | | | 1.83 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 82.4 | | | 0.1 | | | 0.0 | | | 0.5 | 0.4 |
| Delay (s) | | 109.4 | | | 22.7 | | | 34.0 | | | 22.4 | 20.0 |
| Level of Service | | F | | | C | | | C | | | C | C |
| Approach Delay (s) | | 109.4 | | | 22.7 | | | 34.0 | | | 20.8 | |
| Approach LOS | | F | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 55.9 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 72.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 93 | 0 | 0 | 122 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.2 | 19.1 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.6 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 41 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 43 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 24 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.08 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.1 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.33 | 0.75 | 1.24 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.6 | | 5.1 | 12.2 | 16.6 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.2 | | | 0.0 | | | 55.2 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 340 | 815 | 220 | 54 | 578 | 287 | 102 | 251 | 55 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 608 | 302 | 107 | 264 | 58 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 228 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1072 | 0 | 57 | 608 | 74 | 0 | 371 | 16 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.63 | | 0.54 | 0.79 | 0.30 | | 0.52 | 0.06 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 22.0 | | 59.2 | 45.8 | 39.8 | | 45.1 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.95 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.7 | 8.0 | 3.0 | | 2.7 | 0.4 | 49.7 | | 0.4 |
| Delay (s) | 30.7 | 4.7 | | 77.9 | 53.8 | 42.8 | | 45.3 | 40.6 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 51.8 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | |  | |  |  |  | |
| Volume (vph) | 0 | 893 | 166 | 105 | 839 | 0 | 74 | 0 | 89 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 299 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 184 | 117 | 932 | 0 | 82 | 0 | 99 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1161 | 0 | 117 | 932 | 0 | 82 | 0 | 32 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 1798 | | 179 | 1889 | | 346 | | 464 | 577 | 594 | |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | 0.01 | |
| v/s Ratio Perm | | | | c0.39 | | | c0.08 | | 0.02 | 0.01 | | |
| v/c Ratio | | 0.65 | | 0.65 | 0.49 | | 0.24 | | 0.07 | 0.02 | 0.03 | |
| Uniform Delay, d1 | | 13.1 | | 13.2 | 11.4 | | 25.0 | | 23.6 | 23.2 | 23.4 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.8 | | 17.1 | 0.9 | | 1.6 | | 0.3 | 0.1 | 0.1 | |
| Delay (s) | | 14.9 | | 30.3 | 12.3 | | 26.6 | | 23.9 | 23.3 | 23.5 | |
| Level of Service | | B | | C | B | | C | | C | C | C | |
| Approach Delay (s) | | 14.9 | | | 14.3 | | | 25.1 | | | 23.4 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 301 | 0 | 1230 | 215 | 686 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.6 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.11 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.8 | | 848.6 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 40.4 | | 886.1 | 21.8 | 18.4 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 719.9 | | | 19.2 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 326.5 | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 102.1% | | | ICU Level of Service | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 146 | 0 | 0 | 0 | 0 | 579 | 410 | 359 | 734 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 151 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 964 | 0 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | | | | Perm | Prot | |
| Protected Phases | 4 | | | | | | 2 | | | 1 6 | | |
| Permitted Phases | 4 | | | | | | | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | 0.14 | | | c0.23 0.16 | | |
| v/s Ratio Perm | 0.20 | 0.31 | | | | | | c0.19 | | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.51 | 0.71 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.6 | | | | | | 32.7 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.14 | 1.14 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.5 | | | | | | 1.4 | 6.2 | 4.8 | 0.1 | |
| Delay (s) | 35.5 | 52.0 | | | | | | 38.7 | 45.8 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | 48.2 | | | | 0.0 | | | 41.6 | | 12.8 | | |
| Approach LOS | D | | | | A | | | D | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 34.6 | | | HCM Level of Service | | | | | C | | | |
| HCM Volume to Capacity ratio | 0.82 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 105.0 | | | Sum of lost time (s) | | | | | 12.0 | | | |
| Intersection Capacity Utilization | 102.1% | | | ICU Level of Service | | | | | G | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 164 | 0 | 0 | 149 | 5 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 974 | 1846 | | | 1955 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 182 | 0 | 0 | 166 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 182 | 0 | 0 | 171 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 536 | 995 | | 634 | 1086 | | | 1058 | |
| v/s Ratio Prot | | | | | 0.01 | | 0.00 | c0.10 | | | 0.09 | |
| v/s Ratio Perm | | | | c0.19 | | | 0.01 | | | | | |
| v/c Ratio | | | | 0.60 | 0.04 | | 0.02 | 0.17 | | | 0.16 | |
| Uniform Delay, d1 | | | | 24.5 | 20.0 | | 10.5 | 8.0 | | | 9.8 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.04 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 4.9 | 0.1 | | 0.1 | 0.3 | | | 0.3 | |
| Delay (s) | | | | 29.4 | 20.1 | | 11.0 | 9.8 | | | 10.1 | |
| Level of Service | | | | C | C | | B | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 28.0 | | | 9.8 | | | 10.1 | |
| Approach LOS | | A | | | C | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th St & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  |  |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 149 | 45 | 46 | 393 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1718 | | 987 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 157 | 47 | 48 | 414 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 191 | 0 | 48 | 414 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 808 | | 630 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.11 | | 0.01 | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.24 | | 0.08 | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.4 | | 8.8 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.98 | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.7 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.1 | | 8.8 | 9.0 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 14.1 | | | 9.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 41.8% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th St & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 48 | 42 | 12 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1752 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1752 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 47 | 13 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 0 | 13 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.51 | 0.61 | 1.43 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.4 | 5.0 | 12.7 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.9 | 12.7 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 132 | 0 | 0 | 283 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.47 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 844 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 147 | 0 | 0 | 314 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 147 | 0 | 0 | 314 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 606 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.09 | | | 0.18 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.47 | 0.15 | | | 0.40 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 13.7 | 7.5 | | | 15.9 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.6 | 0.3 | | | 1.6 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.4 | 7.8 | | | 17.4 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.5 | | | 17.2 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

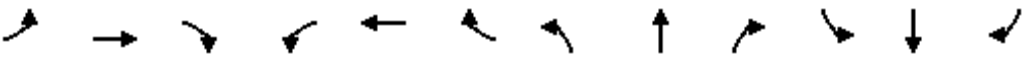
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 205 | 30 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3287 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3287 | | 1061 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 106 | 104 | 42 | 148 | 228 | 33 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 242 | 0 | 148 | 246 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1490 | | 640 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.07 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.16 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.84 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.1 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 273 | 24 | 159 | 589 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3172 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 600 | 3172 | | 1008 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 287 | 25 | 167 | 620 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 303 | 0 | 167 | 665 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 336 | 1776 | | 564 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.2 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 2.9 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1013: 100th Street & Cottage Grove Avenue

1/14/2013

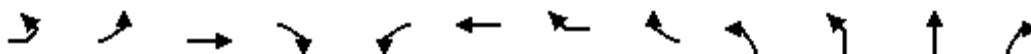


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 251 | 588 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 279 | 653 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 167 | 186 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.7 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.30 | 0.33 | 0.71 | 0.48 | |
| Capacity (veh/h) | 592 | 528 | 546 | 602 | 622 | |
| Control Delay (s) | 12.6 | 11.2 | 11.2 | 20.8 | 12.7 | |
| Approach Delay (s) | 12.6 | 11.2 | | 17.4 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 53.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013



| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
|------------------------|------|-------|-------|------|------|-------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 32 | 35 | 378 | 18 | 24 | 414 | 78 | 82 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1421 | | | 1710 | 3251 | |
| Flt Permitted | | 0.14 | 1.00 | 1.00 | 0.52 | 1.00 | 1.00 | | | 0.14 | 1.00 | |
| Satd. Flow (perm) | | 238 | 1731 | 1530 | 930 | 1731 | 1421 | | | 257 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 420 | 20 | 27 | 460 | 87 | 91 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 0 | 36 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 420 | 8 | 27 | 460 | 142 | 0 | 0 | 137 | 422 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Effective Green, g (s) | | 44.0 | 44.0 | 44.0 | 25.0 | 25.0 | 25.0 | | | 28.0 | 28.0 | |
| Actuated g/C Ratio | | 0.42 | 0.42 | 0.42 | 0.24 | 0.24 | 0.24 | | | 0.27 | 0.27 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 303 | 725 | 641 | 221 | 412 | 338 | | | 69 | 867 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.27 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.07 | | 0.01 | 0.03 | | 0.10 | | | c0.53 | | |
| v/c Ratio | | 0.25 | 0.58 | 0.01 | 0.12 | 1.12 | 0.42 | | | 1.99 | 0.49 | |
| Uniform Delay, d1 | | 21.6 | 23.4 | 17.8 | 31.4 | 40.0 | 33.9 | | | 38.5 | 32.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.9 | 3.4 | 0.0 | 1.1 | 79.9 | 3.8 | | | 491.0 | 2.0 | |
| Delay (s) | | 23.5 | 26.8 | 17.9 | 32.5 | 119.9 | 37.7 | | | 529.5 | 34.4 | |
| Level of Service | | C | C | B | C | F | D | | | F | C | |
| Approach Delay (s) | | | 25.9 | | | 94.3 | | | | | 154.2 | |
| Approach LOS | | | C | | | F | | | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|------|
| HCM Average Control Delay | 147.4 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.45 | | |
| Actuated Cycle Length (s) | 105.0 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 104.2% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 107 | 571 | 82 | 103 | 4 | 114 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1705 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.37 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 670 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 634 | 91 | 114 | 4 | 127 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 119 | 827 | 0 | 0 | 0 | 131 | 867 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Effective Green, g (s) | 27.5 | 27.5 | | | | 20.5 | 20.5 | |
| Actuated g/C Ratio | 0.26 | 0.26 | | | | 0.20 | 0.20 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 175 | 850 | | | | 334 | 514 | |
| v/s Ratio Prot | | 0.25 | | | | 0.08 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.33 | |
| v/c Ratio | 0.68 | 0.97 | | | | 0.39 | 1.69 | |
| Uniform Delay, d1 | 34.8 | 38.4 | | | | 36.8 | 42.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 19.3 | 25.0 | | | | 3.4 | 317.6 | |
| Delay (s) | 54.1 | 63.4 | | | | 40.3 | 359.9 | |
| Level of Service | D | E | | | | D | F | |
| Approach Delay (s) | | 62.2 | | | | 319.0 | | |
| Approach LOS | | E | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 602 | 0 | 0 | 506 | 50 | 85 | 52 | 18 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1956 | | | 1842 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1523 | | | 1956 | | | 1842 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 669 | 0 | 0 | 562 | 56 | 94 | 58 | 20 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 741 | 0 | 0 | 618 | 0 | 0 | 172 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 937 | | | 1204 | | | 482 | | | | |
| v/s Ratio Prot | | | | | 0.32 | | | | | | | |
| v/s Ratio Perm | | 0.49 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.79 | | | 0.51 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.4 | | | 7.0 | | | 19.5 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 6.8 | | | 1.6 | | | 2.1 | | | | |
| Delay (s) | | 16.1 | | | 8.6 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 16.1 | | | 8.6 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 87.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 427 | 162 | 117 | 335 | 125 | 106 | 639 | 84 | 137 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.94 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1985 | 1434 | | 1950 | 1444 | 1546 | 3040 | 1296 | 1506 | 3069 | 1252 |
| Flt Permitted | | 0.38 | 1.00 | | 0.54 | 1.00 | 0.23 | 1.00 | 1.00 | 0.29 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 757 | 1434 | | 1077 | 1444 | 373 | 3040 | 1296 | 455 | 3069 | 1252 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 449 | 171 | 123 | 353 | 132 | 112 | 673 | 88 | 144 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 101 | 0 | 0 | 94 | 0 | 0 | 53 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 524 | 70 | 0 | 476 | 38 | 112 | 673 | 35 | 144 | 799 | 50 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 30.0 | 30.0 | 50.6 | 42.3 | 42.3 | 51.4 | 42.7 | 42.7 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.29 | 0.29 | 0.48 | 0.40 | 0.40 | 0.49 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 427 | 587 | | 308 | 413 | 272 | 1225 | 522 | 310 | 1248 | 509 |
| v/s Ratio Prot | | c0.12 | | | | | 0.03 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.39 | 0.05 | | c0.44 | 0.03 | 0.17 | | 0.03 | 0.19 | | 0.04 |
| v/c Ratio | | 1.23 | 0.12 | | 1.55 | 0.09 | 0.41 | 0.55 | 0.07 | 0.46 | 0.64 | 0.10 |
| Uniform Delay, d1 | | 31.0 | 19.2 | | 37.5 | 27.5 | 16.5 | 24.0 | 19.2 | 16.0 | 25.0 | 19.2 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.75 | 1.55 | 2.63 |
| Incremental Delay, d2 | | 121.4 | 0.4 | | 261.0 | 0.4 | 1.0 | 1.8 | 0.3 | 1.1 | 2.4 | 0.4 |
| Delay (s) | | 152.4 | 19.7 | | 298.5 | 27.9 | 17.5 | 25.8 | 19.5 | 29.0 | 41.1 | 51.0 |
| Level of Service | | F | B | | F | C | B | C | B | C | D | D |
| Approach Delay (s) | | 119.7 | | | 239.8 | | | 24.1 | | | 40.4 | |
| Approach LOS | | F | | | F | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 90.8 | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | | 0.96 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 486 | 99 | 94 | 468 | 94 | 55 | 61 | 69 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1645 | | | 1799 | | | | |
| Flt Permitted | | 0.85 | | | 0.83 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1411 | | | 1381 | | | 1799 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 540 | 110 | 104 | 520 | 104 | 61 | 68 | 77 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 33 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 734 | 0 | 0 | 719 | 0 | 0 | 173 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 868 | | | 850 | | | 471 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.52 | | | 0.52 | | | 0.10 | | | | |
| v/c Ratio | | 0.85 | | | 0.85 | | | 0.37 | | | | |
| Uniform Delay, d1 | | 10.0 | | | 10.0 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 10.0 | | | 10.1 | | | 2.2 | | | | |
| Delay (s) | | 20.0 | | | 20.1 | | | 21.8 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 20.0 | | | 20.1 | | | 21.8 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 20.3 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.70 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 69.7% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue












1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 53 | 485 | 82 | 76 | 525 | 37 | 39 | 76 | 72 | 54 | 238 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1685 | 1382 | | 1713 | 1417 | | 1685 | 1455 | | 1879 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.85 | 1.00 | | 0.82 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1505 | 1382 | | 1459 | 1417 | | 1404 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 511 | 86 | 80 | 553 | 39 | 41 | 80 | 76 | 57 | 251 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 567 | 49 | 0 | 633 | 27 | 0 | 121 | 24 | 0 | 357 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 863 | 792 | | 836 | 812 | | 449 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.38 | 0.04 | | c0.43 | 0.02 | | 0.09 | 0.02 | | c0.20 | |
| v/c Ratio | | 0.66 | 0.06 | | 0.76 | 0.03 | | 0.27 | 0.05 | | 0.63 | |
| Uniform Delay, d1 | | 11.0 | 7.1 | | 12.1 | 7.0 | | 19.0 | 17.6 | | 21.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 0.2 | | 6.3 | 0.1 | | 1.5 | 0.2 | | 5.2 | |
| Delay (s) | | 14.8 | 7.2 | | 18.4 | 7.0 | | 20.4 | 17.8 | | 26.9 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.8 | | | 17.7 | | | 19.4 | | | 26.9 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.71 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 100.7% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 483 | 34 | 45 | 537 | 54 | 45 | 165 | 55 | 123 | 210 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1533 | 3066 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.35 | 1.00 | | 0.40 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 563 | 3066 | | 687 | 3730 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 537 | 38 | 50 | 597 | 60 | 50 | 183 | 61 | 137 | 233 | 37 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 66 | 567 | 0 | 50 | 645 | 0 | 50 | 183 | 24 | 137 | 233 | 15 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 269 | 1462 | | 328 | 1779 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.19 | | | 0.17 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.07 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.25 | 0.39 | | 0.15 | 0.36 | | 0.13 | 0.28 | 0.04 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.1 | 10.9 | | 9.6 | 10.8 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.83 | 0.89 | 0.73 | 0.59 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.2 | 0.8 | | 1.0 | 0.6 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.2 | 11.7 | | 10.6 | 11.3 | | 11.0 | 12.7 | 8.8 | 9.9 | 9.4 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.7 | | | 11.3 | | | 11.6 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 409 | 81 | 73 | 394 | 67 | 57 | 180 | 64 | 89 | 245 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3134 | | 1519 | 3128 | | 1580 | 2919 | | 1452 | 2997 | |
| Flt Permitted | 0.44 | 1.00 | | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 619 | 3134 | | 678 | 3128 | | 882 | 2919 | | 907 | 2997 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 431 | 85 | 77 | 415 | 71 | 60 | 189 | 67 | 94 | 258 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 516 | 0 | 77 | 486 | 0 | 60 | 217 | 0 | 94 | 300 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 297 | 1504 | | 325 | 1501 | | 365 | 1207 | | 375 | 1239 | |
| v/s Ratio Prot | c0.16 | | | 0.16 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.11 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.34 | | 0.24 | 0.32 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.3 | 12.1 | | 11.4 | 12.0 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 1.7 | 0.6 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.9 | 12.8 | | 13.2 | 12.6 | | 14.8 | 14.3 | | 16.0 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.7 | | | 14.4 | | | 15.1 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 51.8% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 96 | 439 | 62 | 32 | 522 | 48 | 86 | 203 | 60 | 76 | 473 | 109 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1652 | | 1370 | 1973 | | 1534 | 2998 | | 1535 | 3013 | |
| Flt Permitted | 0.24 | 1.00 | | 0.31 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 405 | 1652 | | 447 | 1973 | | 453 | 2998 | | 939 | 3013 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 101 | 462 | 65 | 34 | 549 | 51 | 91 | 214 | 63 | 80 | 498 | 115 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 101 | 527 | 0 | 34 | 600 | 0 | 91 | 277 | 0 | 80 | 613 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 274 | 725 | | 247 | 829 | | 205 | 698 | | 329 | 702 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.30 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.17 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.37 | 0.73 | | 0.14 | 0.72 | | 0.44 | 0.40 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 23.5 | 19.7 | | 20.2 | 20.5 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 6.3 | | 0.3 | 5.5 | | 1.5 | 1.7 | | 0.4 | 14.2 | |
| Delay (s) | 24.4 | 25.9 | | 20.4 | 26.0 | | 30.7 | 29.2 | | 22.2 | 45.5 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 25.7 | | | 25.7 | | | 29.6 | | | 42.9 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue

1/14/2013




















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 75 | 393 | 65 | 117 | 509 | 118 | 67 | 158 | 58 | 127 | 367 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3131 | | 1652 | 3237 | | 1549 | 3027 | |
| Flt Permitted | | 0.71 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2643 | | | 2282 | | 737 | 3237 | | 983 | 3027 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 437 | 72 | 130 | 566 | 131 | 74 | 176 | 64 | 141 | 408 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 592 | 0 | 0 | 827 | 0 | 74 | 240 | 0 | 141 | 499 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1198 | | | 1035 | | 324 | 1424 | | 433 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.22 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.49 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.37 | |
| Uniform Delay, d1 | | 14.4 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 6.5 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 15.9 | | | 24.0 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.9 | | | 24.0 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.2 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue

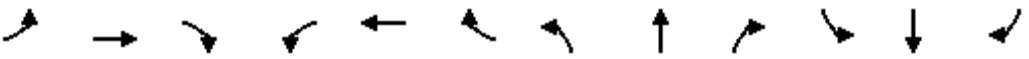










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 871 | 6 | 20 | 584 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 648 | 3206 | | 436 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 968 | 7 | 22 | 649 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 975 | 0 | 22 | 649 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 406 | 2008 | | 273 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | | c0.30 | | | 0.20 | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.8 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.2 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | | 8.2 | | | 6.6 | | | 20.0 | | | 24.0 | |
| Approach LOS | | A | | | A | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.8 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 73.6 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 58.1% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 125 | 94 | 163 | 56 | 144 | 907 | 90 | 129 | 825 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.20 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1504 | | 337 | 1585 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 132 | 99 | 172 | 59 | 152 | 955 | 95 | 136 | 868 | 103 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 138 | 349 | 0 | 99 | 216 | 0 | 152 | 955 | 55 | 136 | 868 | 55 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 285 | 389 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.05 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.26 | | 0.04 | 0.26 | | 0.04 |
| v/c Ratio | 0.48 | 0.90 | | 0.52 | 0.53 | | 0.66 | 0.76 | 0.10 | 0.64 | 0.68 | 0.10 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.0 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.79 | 0.53 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.9 | | 9.9 | 4.8 | | 12.3 | 3.8 | 0.3 | 13.8 | 2.9 | 0.4 |
| Delay (s) | 28.4 | 56.3 | | 32.7 | 31.8 | | 22.1 | 20.7 | 8.5 | 28.8 | 23.4 | 15.7 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.8 | | | 32.1 | | | 19.9 | | | 23.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 74.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 37 | 20 | 173 | 22 | 33 | 149 | 40 | 46 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1837 | | | 1848 | | | 1938 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.92 | | | 0.94 | |
| Satd. Flow (perm) | | 1781 | | | 1790 | | | 1800 | | | 1869 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 38 | 21 | 178 | 23 | 34 | 154 | 41 | 47 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 238 | 0 | 0 | 216 | 0 | 0 | 217 | 0 | 0 | 353 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 831 | | | 863 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.12 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.26 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.7 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.70 | | | 1.22 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 9.8 | | | 13.8 | | | 13.0 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 9.8 | | | 13.8 | | | 13.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 51.2% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 39 | 25 | 180 | 19 | 49 | 200 | 31 | 43 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3057 | | 1577 | 3119 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3057 | | 984 | 3119 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 43 | 28 | 200 | 21 | 54 | 222 | 34 | 48 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 54 | 242 | 0 | 48 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 912 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.97 | | 0.74 | 0.73 | | 1.31 | 1.31 | | 0.38 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.2 | 17.7 | | 13.1 | 13.4 | | 8.2 | 8.1 | | 2.5 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.5 | | | 13.4 | | | 8.1 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.9 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 42 | 25 | 159 | 38 | 27 | 247 | 16 | 40 | 322 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2937 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3056 | | 973 | 2937 | | | 1823 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 47 | 28 | 177 | 42 | 30 | 274 | 18 | 44 | 358 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 206 | 0 | 28 | 194 | 0 | 0 | 319 | 0 | 0 | 434 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1222 | | 389 | 1175 | | | 869 | | | 878 | |
| v/s Ratio Prot | 0.07 | | | 0.07 | | | 0.17 | | | 0.24 | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | 0.17 | | | c0.24 | | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.37 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.04 | 0.99 | | 0.78 | 0.76 | | | 1.01 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.1 | 12.7 | | 9.7 | 9.9 | | | 12.1 | | | 13.6 | |
| Level of Service | B | B | | A | A | | | B | | | B | |
| Approach Delay (s) | 13.0 | | | 9.8 | | | 12.1 | | | 13.6 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.35 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 57.6% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 20 | 161 | 27 | 41 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1970 | | 1087 | 1975 | | | 1792 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 22 | 179 | 30 | 46 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 22 | 209 | 0 | 0 | 319 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 606 | | 334 | 608 | | | 1020 | | | 1088 | |
| v/s Ratio Prot | | 0.08 | | | c0.11 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.07 | 0.34 | | | 0.31 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.83 | 0.81 | | 0.92 | 0.93 | | | 0.96 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.8 | 14.6 | | 15.0 | 17.7 | | | 7.9 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.7 | | | 17.5 | | | 7.9 | | | 9.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.39 | 2.74 | | 1.00 | 1.00 | | 0.82 | 0.76 | 0.98 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.6 | 48.1 | | 17.1 | 17.1 | | 5.5 | 5.2 | 5.1 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.7 | | | 17.1 | | | 5.3 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  | |
| Volume (vph) | 0 | 255 | 163 | 198 | 215 | 0 | 0 | 0 | 0 | 111 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.40 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 719 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 268 | 172 | 208 | 226 | 0 | 0 | 0 | 0 | 117 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 339 | 0 | 208 | 226 | 0 | 0 | 0 | 0 | 117 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | | | D.P+P | | | | | | | | Split | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 565 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | 0.12 | | c0.07 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | c0.12 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.37 | 0.13 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.7 | 11.1 | | | | | 22.5 | 27.6 | |
| Progression Factor | | 1.00 | | 2.23 | 2.15 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.6 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.5 | | 32.0 | 24.0 | | | | | 23.4 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.5 | | | 27.9 | | | 0.0 | | | 30.1 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 225 | 0 | 0 | 336 | 119 | 77 | 539 | 236 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1675 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.32 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 571 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 237 | 0 | 0 | 354 | 125 | 81 | 567 | 248 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 170 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 237 | 0 | 0 | 444 | 0 | 81 | 567 | 78 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 687 | 1974 | | | 728 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.16 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.22 | 0.12 | | | 0.61 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.4 | 8.1 | | | 33.5 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.1 | | | 3.8 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 5.0 | 3.6 | | | 37.3 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 37.3 | | | 73.0 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 517 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 13 | 436 | 301 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3099 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3099 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 539 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 14 | 454 | 314 |
| RTOR Reduction (vph) | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 200 |
| Lane Group Flow (vph) | 0 | 870 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 14 | 454 | 114 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1116 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.78 | | 0.22 | 0.29 | | | | | 0.03 | 0.42 | 0.22 |
| Uniform Delay, d1 | | 28.5 | | 14.4 | 10.6 | | | | | 22.0 | 25.4 | 23.5 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.4 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 1.0 |
| Delay (s) | | 33.9 | | 15.5 | 12.9 | | | | | 22.1 | 26.6 | 24.5 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.9 | | | 13.2 | | | 0.0 | | | 25.7 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 93.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 422 | 104 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2286 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 435 | 107 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 217 | 325 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1462 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.12 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.2 | 3.7 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.9 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | | HCM Level of Service | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 93.6% | | | | ICU Level of Service | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔↔ | | | ↔↔ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 316 | 117 | 109 | 270 | 111 | 87 | 699 | 76 | 100 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2955 | | | 2935 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.77 | | | 0.72 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2281 | | | 2151 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 329 | 122 | 114 | 281 | 116 | 91 | 728 | 79 | 104 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 32 | 0 | 0 | 0 | 48 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 499 | 0 | 0 | 479 | 0 | 91 | 728 | 31 | 104 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1014 | | | 709 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.03 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.17 | | | c0.22 | | 0.21 | | 0.02 | 0.18 | | 0.03 |
| v/c Ratio | | 0.49 | | | 0.68 | | 0.54 | 0.60 | 0.06 | 0.47 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 17.8 | | | 24.6 | | 16.8 | 20.5 | 16.3 | 15.9 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.48 | 0.68 | 0.77 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.7 | | | 5.1 | | 11.1 | 2.0 | 0.2 | 5.0 | 3.1 | 0.2 |
| Delay (s) | | 19.6 | | | 29.7 | | 36.0 | 16.0 | 12.8 | 22.6 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | D | B | B | C | C | C |
| Approach Delay (s) | | 19.6 | | | 29.7 | | | 17.8 | | | 28.3 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 76.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 410 | 0 | 0 | 367 | 84 | 54 | 44 | 33 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1734 | | | 1704 | | | 1654 | | | | |
| Flt Permitted | | 0.87 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1519 | | | 1704 | | | 1654 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 456 | 0 | 0 | 408 | 93 | 60 | 49 | 37 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 540 | 0 | 0 | 489 | 0 | 0 | 127 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 888 | | | 996 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.61 | | | 0.49 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.7 | | | 7.9 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.76 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.1 | | | 1.5 | | | 1.3 | | | | |
| Delay (s) | | 11.8 | | | 7.5 | | | 19.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 11.8 | | | 7.5 | | | 19.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 70.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 29 | 374 | 37 | 39 | 369 | 50 | 31 | 118 | 39 | 53 | 150 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1954 | | | 1941 | | | 2969 | | | 2981 | |
| Flt Permitted | | 0.95 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1869 | | | 1825 | | | 2646 | | | 2589 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 32 | 416 | 41 | 43 | 410 | 56 | 34 | 131 | 43 | 59 | 167 | 50 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 0 | 0 | 502 | 0 | 0 | 183 | 0 | 0 | 247 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 863 | | | 842 | | | 1099 | | | 1075 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.28 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.56 | | | 0.60 | | | 0.17 | | | 0.23 | |
| Uniform Delay, d1 | | 12.7 | | | 13.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.56 | | | 0.40 | | | 1.30 | | | 0.44 | |
| Incremental Delay, d2 | | 2.2 | | | 2.7 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 9.2 | | | 7.9 | | | 15.9 | | | 5.9 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 9.2 | | | 7.9 | | | 15.9 | | | 5.9 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 9.1 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.42 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.0% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 320 | 49 | 81 | 464 | 86 | 46 | 219 | 98 | 83 | 227 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1510 | 3034 | | 1572 | 3077 | | 1587 | 2962 | | 1585 | 3071 | |
| Flt Permitted | 0.32 | 1.00 | | 0.47 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 505 | 3034 | | 775 | 3077 | | 928 | 2962 | | 903 | 3071 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 356 | 54 | 90 | 516 | 96 | 51 | 243 | 109 | 92 | 252 | 72 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 24 | 0 | 0 | 50 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 57 | 391 | 0 | 90 | 588 | 0 | 51 | 302 | 0 | 92 | 291 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 171 | 1027 | | 262 | 1041 | | 500 | 1595 | | 486 | 1654 | |
| v/s Ratio Prot | | 0.13 | | | c0.19 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.05 | | | c0.10 | | |
| v/c Ratio | 0.33 | 0.38 | | 0.34 | 0.57 | | 0.10 | 0.19 | | 0.19 | 0.18 | |
| Uniform Delay, d1 | 16.0 | 16.3 | | 16.1 | 17.6 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.67 | 0.64 | | 0.93 | 0.93 | | 0.72 | 0.61 | | 1.09 | 1.08 | |
| Incremental Delay, d2 | 4.6 | 0.9 | | 3.5 | 2.2 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 15.3 | 11.4 | | 18.5 | 18.6 | | 5.6 | 5.0 | | 9.3 | 8.5 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 11.9 | | | 18.6 | | | 5.1 | | | 8.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.2 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.33 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.6% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 338 | 78 | 87 | 414 | 50 | 46 | 231 | 58 | 46 | 279 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1509 | 3016 | | 1430 | 3722 | | | 3485 | | | 3519 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 712 | 3016 | | 725 | 3722 | | | 3028 | | | 3118 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 356 | 82 | 92 | 436 | 53 | 48 | 243 | 61 | 48 | 294 | 68 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 15 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 408 | 0 | 92 | 474 | 0 | 0 | 325 | 0 | 0 | 385 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 340 | 1438 | | 346 | 1775 | | | 1211 | | | 1247 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | 0.11 | | | c0.12 | | |
| v/s Ratio Perm | 0.09 | | | 0.13 | | | | 0.11 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.28 | | 0.27 | 0.27 | | | 0.27 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.2 | 10.2 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.59 | 1.73 | | 1.10 | 1.10 | | | 0.43 | | | 0.73 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.7 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.6 | 18.3 | | 12.9 | 11.5 | | | 6.2 | | | 10.4 | |
| Level of Service | B | B | | B | B | | | A | | | B | |
| Approach Delay (s) | 18.1 | | | 11.7 | | | 6.2 | | | 10.4 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 58.4% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 284 | 91 | 92 | 289 | 92 | 120 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3086 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.79 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1332 | 1436 | | 2469 | | | 1303 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 316 | 101 | 102 | 321 | 102 | 133 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 48 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 412 | 53 | 0 | 493 | 0 | 0 | 263 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 697 | 751 | | 1291 | | | 421 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | 0.04 | | 0.20 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.59 | 0.07 | | 0.38 | | | 0.63 | | | 0.41 | |
| Uniform Delay, d1 | | 10.7 | 7.7 | | 9.2 | | | 18.7 | | | 17.2 | |
| Progression Factor | | 1.82 | 4.59 | | 0.52 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.6 | 0.2 | | 0.8 | | | 6.8 | | | 2.3 | |
| Delay (s) | | 23.0 | 35.4 | | 5.6 | | | 25.5 | | | 19.5 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 25.5 | | | 5.6 | | | 25.5 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 79.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 271 | 28 | 26 | 323 | 60 | 26 | 133 | 47 | 62 | 146 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3025 | | 1565 | 3018 | | | 3582 | | | 3599 | |
| Flt Permitted | 0.49 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 740 | 3025 | | 909 | 3018 | | | 3238 | | | 3069 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 301 | 31 | 29 | 359 | 67 | 29 | 148 | 52 | 69 | 162 | 70 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 24 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 320 | 0 | 29 | 402 | 0 | 0 | 199 | 0 | 0 | 260 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 342 | 1396 | | 420 | 1393 | | | 1345 | | | 1275 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.18 | 0.23 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.5 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.69 | 0.69 | | 0.85 | 0.68 | | | 1.02 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.1 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 8.0 | 7.6 | | 8.4 | 7.7 | | | 12.4 | | | 5.3 | |
| Level of Service | A | A | | A | A | | | B | | | A | |
| Approach Delay (s) | | 7.7 | | | 7.7 | | | 12.4 | | | 5.3 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.9 | | | HCM Level of Service | | | | A | | |
| HCM Volume to Capacity ratio | | | 0.25 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.7% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 440 | 26 | 86 | 503 | 222 | 24 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3280 | | | 3167 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.76 | | | 0.80 | | | 0.90 | | | 0.70 | |
| Satd. Flow (perm) | | 2509 | | | 2532 | | | 2805 | | | 2289 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 489 | 29 | 96 | 559 | 247 | 27 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 60 | 0 | 0 | 69 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 0 | 0 | 842 | 0 | 0 | 224 | 0 | 0 | 743 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | | 30.0 | | | 17.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.38 | | | 0.46 | | | 0.26 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 965 | | | 974 | | | 1338 | | | 599 | |
| v/s Ratio Prot | | | | | | | | c0.03 | | | | |
| v/s Ratio Perm | | 0.22 | | | c0.33 | | | 0.05 | | | c0.32 | |
| v/c Ratio | | 0.58 | | | 0.86 | | | 0.17 | | | 1.36dl | |
| Uniform Delay, d1 | | 15.9 | | | 18.4 | | | 10.2 | | | 24.0 | |
| Progression Factor | | 1.48 | | | 1.00 | | | 1.00 | | | 0.80 | |
| Incremental Delay, d2 | | 2.6 | | | 10.1 | | | 0.3 | | | 121.3 | |
| Delay (s) | | 26.0 | | | 28.5 | | | 10.5 | | | 140.5 | |
| Level of Service | | C | | | C | | | B | | | F | |
| Approach Delay (s) | | 26.0 | | | 28.5 | | | 10.5 | | | 140.5 | |
| Approach LOS | | C | | | C | | | B | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 59.5 | | | HCM Level of Service | | | E | | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 85.7% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 895 | 128 | 48 | 792 | 0 | 81 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2489 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 994 | 142 | 53 | 880 | 0 | 90 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1121 | 0 | 0 | 933 | 0 | 0 | 112 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 913 | | | 236 | | | | | |
| v/s Ratio Prot | c0.37 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.37 | | | c0.08 | | | | | |
| v/c Ratio | 0.57 | | | 1.02 | | | 0.47 | | | | | |
| Uniform Delay, d1 | 9.0 | | | 28.5 | | | 33.2 | | | | | |
| Progression Factor | 0.14 | | | 1.42 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 34.2 | | | 6.7 | | | | | |
| Delay (s) | 1.6 | | | 74.8 | | | 39.9 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.6 | | | 74.8 | | | 39.9 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.0 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.77 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.6% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 222 | 642 | 22 | 112 | 614 | 185 | 60 | 4 | 107 | 212 | 10 | 212 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.43 | 1.00 | 1.00 |
| Satd. Flow (perm) | 472 | 3194 | | 585 | 3320 | 1485 | | 1593 | | 758 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 247 | 713 | 24 | 124 | 682 | 206 | 67 | 4 | 119 | 236 | 11 | 236 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 95 | 0 | 92 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 247 | 735 | 0 | 124 | 682 | 111 | 0 | 98 | 0 | 236 | 11 | 101 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.0 | 42.6 | | 47.8 | 38.4 | 48.4 | | 12.0 | | 25.0 | 25.0 | 38.6 |
| Effective Green, g (s) | 55.0 | 42.6 | | 47.8 | 38.4 | 48.4 | | 12.0 | | 25.0 | 25.0 | 38.6 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.43 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 451 | 1512 | | 423 | 1417 | 799 | | 212 | | 311 | 486 | 637 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.46 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.2 | | 10.8 | 18.6 | 10.4 | | 36.0 | | 28.7 | 23.6 | 15.8 |
| Progression Factor | 2.65 | 1.87 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.2 | 0.0 | 0.2 |
| Delay (s) | 25.7 | 31.3 | | 11.3 | 19.8 | 10.5 | | 38.2 | | 38.9 | 23.6 | 15.9 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 29.9 | | | 16.9 | | | 38.2 | | | 27.3 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 61.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 | | | | | | | |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 22.8 | | | | | | | | | | | | |
| Approach LOS | | | | | | C | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 7.2 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 54.2% | | ICU Level of Service | | A | | | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 472 | 90 | 192 | 594 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3133 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.33 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3133 | | 559 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 524 | 100 | 213 | 660 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 606 | 0 | 213 | 660 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1327 | | 445 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.21 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.22 | | | | | | | | |
| v/c Ratio | | 0.46 | | 0.48 | 0.36 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.5 | | 16.3 | 9.6 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.49 | 0.41 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.1 | 0.5 | | | | | | 0.3 | |
| Delay (s) | | 18.6 | | 11.0 | 4.4 | | | | | | 21.2 | |
| Level of Service | | B | | B | A | | | | | | C | |
| Approach Delay (s) | | 18.6 | | | 6.0 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 46.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Ave

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 624 | 129 | 162 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3127 | | | 4519 | | | | |
| Flt Permitted | 0.22 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | 385 | 3320 | | | 3127 | | | 4519 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 531 | 0 | 0 | 693 | 143 | 180 | 100 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 44 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 531 | 0 | 0 | 815 | 0 | 0 | 300 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 367 | 1875 | | | 1288 | | | 1435 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.26 | | | c0.07 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.29 | 0.28 | | | 0.63 | | | 0.21 | | | | |
| Uniform Delay, d1 | 18.1 | 9.6 | | | 19.9 | | | 21.2 | | | | |
| Progression Factor | 0.41 | 0.33 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.8 | 0.4 | | | 2.4 | | | 0.3 | | | | |
| Delay (s) | 9.3 | 3.5 | | | 22.3 | | | 21.5 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 22.3 | | | 21.5 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 342 | 126 | 79 | 366 | 79 | 178 | 78 | 27 | 30 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.99 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2969 | | | 3006 | | | 1840 | | | 1769 | |
| Flt Permitted | | 0.68 | | | 0.72 | | | 0.65 | | | 0.94 | |
| Satd. Flow (perm) | | 2025 | | | 2179 | | | 1242 | | | 1676 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 380 | 140 | 88 | 407 | 88 | 198 | 87 | 30 | 33 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 22 | 0 | 0 | 6 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 608 | 0 | 0 | 561 | 0 | 0 | 309 | 0 | 0 | 222 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 717 | | | 771 | | | 611 | | | 825 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.26 | | | c0.25 | | | 0.13 | |
| v/c Ratio | | 0.85 | | | 0.73 | | | 0.51 | | | 0.27 | |
| Uniform Delay, d1 | | 19.4 | | | 18.3 | | | 11.2 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 11.9 | | | 5.9 | | | 3.0 | | | 0.8 | |
| Delay (s) | | 31.3 | | | 24.2 | | | 14.1 | | | 10.5 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 31.3 | | | 24.2 | | | 14.1 | | | 10.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 22.8 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 82.5% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 201 | 100 | 203 | 311 | 65 | 174 | 589 | 246 | 95 | 953 | 146 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2967 | | 1574 | 3683 | | 1508 | 3069 | 1333 | 1521 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.52 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.31 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2967 | | 862 | 3683 | | 212 | 3069 | 1333 | 490 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 105 | 214 | 327 | 68 | 183 | 620 | 259 | 100 | 1003 | 154 |
| RTOR Reduction (vph) | 0 | 70 | 0 | 0 | 21 | 0 | 0 | 0 | 165 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 214 | 374 | 0 | 183 | 620 | 94 | 100 | 1003 | 56 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 977 | | 338 | 1213 | | 181 | 1119 | 486 | 280 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.10 | | c0.07 | 0.20 | | 0.03 | 0.32 | |
| v/s Ratio Perm | 0.11 | | | c0.19 | | | c0.36 | | 0.07 | 0.13 | | 0.04 |
| v/c Ratio | 0.37 | 0.25 | | 0.63 | 0.31 | | 1.01 | 0.55 | 0.19 | 0.36 | 0.89 | 0.12 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 22.2 | 21.3 | | 20.7 | 21.5 | 18.5 | 15.6 | 25.4 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.41 | 1.05 | 2.36 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 8.7 | 0.7 | | 69.8 | 2.0 | 0.9 | 2.6 | 8.0 | 0.4 |
| Delay (s) | 23.0 | 21.5 | | 30.9 | 21.9 | | 90.5 | 23.5 | 19.4 | 24.6 | 34.6 | 42.7 |
| Level of Service | C | C | | C | C | | F | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 25.1 | | | 34.0 | | | 34.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 76.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 97 | 424 | 30 | 33 | 425 | 24 | 33 | 100 | 41 | 36 | 124 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1957 | 1466 | | 1994 | 1480 | | 2015 | 1506 | | 2001 | 1511 |
| Flt Permitted | | 0.72 | 1.00 | | 0.94 | 1.00 | | 0.91 | 1.00 | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1426 | 1466 | | 1888 | 1480 | | 1863 | 1506 | | 1870 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 102 | 446 | 32 | 35 | 447 | 25 | 35 | 105 | 43 | 38 | 131 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 0 | 548 | 15 | 0 | 482 | 12 | 0 | 140 | 18 | 0 | 169 | 33 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 658 | 677 | | 871 | 683 | | 774 | 626 | | 777 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.38 | 0.01 | | 0.26 | 0.01 | | 0.08 | 0.01 | | c0.09 | 0.02 |
| v/c Ratio | | 0.83 | 0.02 | | 0.55 | 0.02 | | 0.18 | 0.03 | | 0.22 | 0.05 |
| Uniform Delay, d1 | | 15.3 | 9.5 | | 12.7 | 9.5 | | 12.0 | 11.2 | | 12.2 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.62 | 0.56 | | 0.93 | 1.03 | | 1.02 | 0.92 |
| Incremental Delay, d2 | | 11.8 | 0.1 | | 2.5 | 0.0 | | 0.5 | 0.1 | | 0.6 | 0.2 |
| Delay (s) | | 27.1 | 9.6 | | 10.4 | 5.4 | | 11.6 | 11.7 | | 13.1 | 10.6 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 26.1 | | | 10.1 | | | 11.6 | | | 12.3 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.8 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.54 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 94.8% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 115 | 394 | 20 | 41 | 271 | 31 | 10 | 109 | 21 | 110 | 214 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3077 | | 1550 | 3052 | | 1550 | 3025 | | 1550 | 2979 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.54 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3077 | | 795 | 3052 | | 878 | 3025 | | 1078 | 2979 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 128 | 438 | 22 | 46 | 301 | 34 | 11 | 121 | 23 | 122 | 238 | 83 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 49 | 0 |
| Lane Group Flow (vph) | 128 | 454 | 0 | 46 | 322 | 0 | 11 | 131 | 0 | 122 | 272 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1515 | | 269 | 1033 | | 365 | 1257 | | 448 | 1237 | |
| v/s Ratio Prot | c0.08 | c0.15 | | | 0.11 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.06 | | | 0.01 | | | c0.11 | | |
| v/c Ratio | 0.77 | 0.30 | | 0.17 | 0.31 | | 0.03 | 0.10 | | 0.27 | 0.22 | |
| Uniform Delay, d1 | 28.2 | 9.8 | | 15.1 | 15.9 | | 11.2 | 11.6 | | 12.5 | 12.2 | |
| Progression Factor | 1.17 | 0.39 | | 0.75 | 0.73 | | 1.03 | 1.12 | | 1.12 | 1.13 | |
| Incremental Delay, d2 | 22.1 | 0.4 | | 1.3 | 0.8 | | 0.1 | 0.1 | | 1.5 | 0.4 | |
| Delay (s) | 55.0 | 4.2 | | 12.6 | 12.3 | | 11.7 | 13.1 | | 15.5 | 14.2 | |
| Level of Service | D | A | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 15.3 | | | 12.3 | | | 13.0 | | | 14.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 41.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 336 | 69 | 203 | 347 | 63 | 25 | 245 | 20 | 55 | 270 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3019 | | 1550 | 3028 | | | 3272 | | | 3225 | |
| Flt Permitted | 0.49 | 1.00 | | 0.95 | 1.00 | | | 0.90 | | | 0.86 | |
| Satd. Flow (perm) | 798 | 3019 | | 1550 | 3028 | | | 2966 | | | 2803 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 373 | 77 | 226 | 386 | 70 | 28 | 272 | 22 | 61 | 300 | 61 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 23 | 0 | 0 | 8 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 93 | 424 | 0 | 226 | 433 | 0 | 0 | 314 | 0 | 0 | 401 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 246 | 929 | | 143 | 1351 | | | 1141 | | | 1078 | |
| v/s Ratio Prot | c0.14 | | | c0.15 | | | 0.14 | | | | | |
| v/s Ratio Perm | 0.12 | | | | | | 0.11 | | | c0.14 | | |
| v/c Ratio | 0.38 | 0.46 | | 1.58 | 0.32 | | | 0.28 | | | 0.37 | |
| Uniform Delay, d1 | 17.6 | 18.1 | | 29.5 | 11.6 | | | 13.8 | | | 14.4 | |
| Progression Factor | 0.86 | 0.81 | | 1.28 | 1.15 | | | 0.87 | | | 0.70 | |
| Incremental Delay, d2 | 4.3 | 1.6 | | 277.2 | 0.3 | | | 0.6 | | | 1.0 | |
| Delay (s) | 19.4 | 16.2 | | 314.9 | 13.7 | | | 12.5 | | | 11.1 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 16.7 | | | 113.5 | | | 12.5 | | | 11.1 | | |
| Approach LOS | B | | | F | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.4 | | HCM Level of Service | | | D | | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | 11.0 | | | | |
| Intersection Capacity Utilization | | | 57.3% | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 355 | 26 | 75 | 620 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1613 | | | 1602 | | | 3249 | | | | |
| Flt Permitted | | 0.96 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1557 | | | 1484 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 394 | 29 | 83 | 689 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 438 | 0 | 0 | 850 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 994 | | | 947 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.28 | | | 0.57 | | | 0.07 | | | | |
| v/c Ratio | | 0.44 | | | 0.90 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 5.9 | | | 9.9 | | | 20.3 | | | | |
| Progression Factor | | 2.01 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.3 | | | 13.0 | | | 0.9 | | | | |
| Delay (s) | | 13.2 | | | 22.9 | | | 21.2 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 13.2 | | | 22.9 | | | 21.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 86.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 93 | 415 | 598 | 39 | 119 | 164 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 98 | 437 | 629 | 41 | 125 | 173 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.83 | | | | 0.83 | 0.83 |
| vC, conflicting volume | 688 | | | | 1306 | 672 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 522 | | | | 1266 | 503 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 88 | | | | 8 | 63 |
| cM capacity (veh/h) | 845 | | | | 136 | 467 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 535 | 671 | 125 | 173 | | |
| Volume Left | 98 | 0 | 125 | 0 | | |
| Volume Right | 0 | 41 | 0 | 173 | | |
| cSH | 845 | 1700 | 136 | 467 | | |
| Volume to Capacity | 0.12 | 0.39 | 0.92 | 0.37 | | |
| Queue Length 95th (ft) | 10 | 0 | 156 | 42 | | |
| Control Delay (s) | 3.0 | 0.0 | 120.4 | 17.1 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 3.0 | 0.0 | 60.6 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 13.1 | | | |
| Intersection Capacity Utilization | | | 82.2% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | 👉 | | | 👈 | 👈 | |
| Volume (vph) | 690 | 0 | 1 | 619 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 767 | 0 | 1 | 688 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 767 | 0 | 0 | 689 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 63.0 | | | 31.0 | 14.0 | |
| Effective Green, g (s) | 59.0 | | | 31.0 | 14.0 | |
| Actuated g/C Ratio | 0.69 | | | 0.36 | 0.16 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 1213 | | | 637 | 251 | |
| v/s Ratio Prot | c0.44 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.39 | | |
| v/c Ratio | 0.63 | | | 1.08 | 0.03 | |
| Uniform Delay, d1 | 7.1 | | | 27.0 | 29.8 | |
| Progression Factor | 0.10 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.1 | | | 59.8 | 0.2 | |
| Delay (s) | 1.8 | | | 86.8 | 30.1 | |
| Level of Service | A | | | F | C | |
| Approach Delay (s) | 1.8 | | | 86.8 | 30.1 | |
| Approach LOS | A | | | F | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 41.7 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.70 | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 243 | 606 | 32 | 407 | 0 | 0 | 0 | 0 | 17 | 6 | 248 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 270 | 673 | 36 | 452 | 0 | 0 | 0 | 0 | 19 | 7 | 276 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 50 |
| cM capacity (veh/h) | 1119 | | | 1276 | | | 78 | 200 | 544 | 346 | 314 | 555 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 180 | 763 | 488 | 26 | 276 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 673 | 0 | 0 | 276 | | | | | | | |
| cSH | 1700 | 1700 | 1276 | 337 | 555 | | | | | | | |
| Volume to Capacity | 0.11 | 0.45 | 0.03 | 0.08 | 0.50 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 69 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.6 | 17.7 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.6 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 260 | 0 | 439 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 289 | 0 | 488 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 144 | 144 | 488 | | | |
| Volume Left (vph) | 144 | 144 | 488 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.26 | 0.26 | 0.68 | | | |
| Capacity (veh/h) | 536 | 537 | 701 | | | |
| Control Delay (s) | 10.3 | 10.3 | 17.7 | | | |
| Approach Delay (s) | 10.3 | | 17.7 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 40.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 553 | 345 | 332 | 869 | 0 | 0 | 0 | 0 | 303 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1232 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1232 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 582 | 363 | 349 | 915 | 0 | 0 | 0 | 0 | 319 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 113 |
| Lane Group Flow (vph) | 0 | 582 | 155 | 0 | 1264 | 0 | 0 | 0 | 0 | 175 | 571 | 83 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | custom | |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Effective Green, g (s) | | 39.0 | 39.0 | | 67.4 | | | | | 23.0 | 23.0 | 68.0 |
| Actuated g/C Ratio | | 0.24 | 0.24 | | 0.42 | | | | | 0.14 | 0.14 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 775 | 300 | | 1444 | | | | | 195 | 547 | 482 |
| v/s Ratio Prot | | c0.18 | | | c0.37 | | | | | 0.13 | c0.15 | |
| v/s Ratio Perm | | | 0.13 | | | | | | | | | 0.07 |
| v/c Ratio | | 0.75 | 0.52 | | 0.88 | | | | | 0.90 | 1.04 | 0.17 |
| Uniform Delay, d1 | | 56.0 | 52.3 | | 42.4 | | | | | 67.3 | 68.5 | 28.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.17 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 6.6 | 6.2 | | 0.6 | | | | | 37.0 | 50.3 | 0.2 |
| Delay (s) | | 62.6 | 58.6 | | 8.0 | | | | | 104.3 | 118.8 | 28.7 |
| Level of Service | | E | E | | A | | | | | F | F | C |
| Approach Delay (s) | | 61.1 | | | 8.0 | | | 0.0 | | | 98.5 | |
| Approach LOS | | E | | | A | | | A | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.88 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 32.6 | | |
| Intersection Capacity Utilization | | | 84.9% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  |  |  | | | | |
| Volume (vph) | 292 | 564 | 0 | 0 | 869 | 233 | 332 | 214 | 211 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3056 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3056 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 627 | 0 | 0 | 966 | 259 | 369 | 238 | 234 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 93 | 0 | 75 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 627 | 0 | 0 | 966 | 166 | 288 | 478 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | | Perm | Split | | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 84.6 | 84.6 | | | 36.4 | 36.4 | 12.0 | 12.0 | | | | |
| Effective Green, g (s) | 84.6 | 84.6 | | | 36.4 | 36.4 | 12.0 | 12.0 | | | | |
| Actuated g/C Ratio | 0.53 | 0.53 | | | 0.23 | 0.23 | 0.08 | 0.08 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 849 | 1814 | | | 730 | 338 | 117 | 229 | | | | |
| v/s Ratio Prot | c0.20 | 0.18 | | | c0.30 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | | 0.11 | | | | | | |
| v/c Ratio | 0.38 | 0.35 | | | 1.32 | 0.49 | 2.46 | 2.09 | | | | |
| Uniform Delay, d1 | 22.3 | 21.7 | | | 61.8 | 53.8 | 74.0 | 74.0 | | | | |
| Progression Factor | 0.06 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 155.0 | 1.1 | 682.7 | 504.1 | | | | |
| Delay (s) | 1.4 | 1.3 | | | 216.8 | 54.9 | 756.7 | 578.1 | | | | |
| Level of Service | A | A | | | F | D | F | F | | | | |
| Approach Delay (s) | | 1.3 | | | 182.5 | | 639.2 | | | | 0.0 | |
| Approach LOS | | A | | | F | | F | | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 252.7 | | | | HCM Level of Service | | | | F | | | |
| HCM Volume to Capacity ratio | 0.84 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 160.0 | | | | Sum of lost time (s) | | | | 29.0 | | | |
| Intersection Capacity Utilization | 73.1% | | | | ICU Level of Service | | | | D | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 506 | 136 | 89 | 270 | 67 | 108 | 522 | 70 | 96 | 1150 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1575 | 1600 | 1373 | 1596 | 1790 | | 1580 | 3016 | | 1537 | 3027 | |
| Flt Permitted | 0.31 | 1.00 | 1.00 | 0.15 | 1.00 | | 0.11 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | 519 | 1600 | 1373 | 253 | 1790 | | 190 | 3016 | | 534 | 3027 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 533 | 143 | 94 | 284 | 71 | 114 | 549 | 74 | 101 | 1211 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 98 | 0 | 10 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 147 | 533 | 45 | 94 | 345 | 0 | 114 | 612 | 0 | 101 | 1328 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 29.0 | 29.0 | 33.2 | 27.6 | | 43.0 | 36.0 | | 40.2 | 34.6 | |
| Effective Green, g (s) | 34.0 | 30.0 | 29.0 | 31.2 | 27.6 | | 41.0 | 36.0 | | 38.2 | 34.6 | |
| Actuated g/C Ratio | 0.37 | 0.33 | 0.32 | 0.34 | 0.30 | | 0.45 | 0.39 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 263 | 526 | 437 | 154 | 542 | | 177 | 1191 | | 274 | 1148 | |
| v/s Ratio Prot | c0.04 | c0.33 | | 0.03 | 0.19 | | c0.04 | 0.20 | | 0.02 | c0.44 | |
| v/s Ratio Perm | 0.17 | | 0.03 | 0.18 | | | 0.25 | | | 0.14 | | |
| v/c Ratio | 0.56 | 1.01 | 0.10 | 0.61 | 0.64 | | 0.64 | 0.51 | | 0.37 | 1.16 | |
| Uniform Delay, d1 | 20.7 | 30.6 | 21.9 | 23.5 | 27.5 | | 20.5 | 21.0 | | 16.8 | 28.3 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.6 | 42.6 | 0.5 | 7.0 | 5.6 | | 7.8 | 1.6 | | 0.8 | 80.8 | |
| Delay (s) | 23.3 | 73.2 | 22.4 | 30.4 | 33.1 | | 28.3 | 22.5 | | 17.6 | 109.1 | |
| Level of Service | C | E | C | C | C | | C | C | | B | F | |
| Approach Delay (s) | | 55.5 | | | 32.5 | | | 23.4 | | | 102.7 | |
| Approach LOS | | E | | | C | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 65.3 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.98 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 91.2 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 88 | 462 | 111 | 13 | 334 | 22 | 49 | 59 | 19 | 21 | 91 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1963 | 1467 | | 1629 | 1381 | | 1892 | | | 1857 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.98 | 1.00 | | 0.86 | | | 0.97 | |
| Satd. Flow (perm) | | 1760 | 1467 | | 1598 | 1381 | | 1649 | | | 1813 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 93 | 486 | 117 | 14 | 352 | 23 | 52 | 62 | 20 | 22 | 96 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 12 | 0 | 10 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 0 | 579 | 72 | 0 | 366 | 11 | 0 | 124 | 0 | 0 | 164 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 866 | 722 | | 787 | 680 | | 685 | | | 753 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.05 | | 0.23 | 0.01 | | 0.08 | | | c0.09 | |
| v/c Ratio | | 0.67 | 0.10 | | 0.47 | 0.02 | | 0.18 | | | 0.22 | |
| Uniform Delay, d1 | | 12.5 | 8.8 | | 10.9 | 8.4 | | 12.0 | | | 12.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.84 | 2.64 | | 1.00 | | | 1.98 | |
| Incremental Delay, d2 | | 4.1 | 0.3 | | 1.9 | 0.0 | | 0.6 | | | 0.7 | |
| Delay (s) | | 16.6 | 9.1 | | 21.9 | 22.3 | | 12.6 | | | 24.8 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 15.3 | | | 21.9 | | | 12.6 | | | 24.8 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 78.7% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 108 | 244 | 91 | 11 | 226 | 10 | 48 | 114 | 19 | 15 | 184 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1743 | 1443 | | 1728 | 1487 | | 1712 | 1489 | | 1703 | |
| Flt Permitted | | 0.78 | 1.00 | | 0.98 | 1.00 | | 0.85 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1387 | 1443 | | 1692 | 1487 | | 1481 | 1489 | | 1680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 114 | 257 | 96 | 12 | 238 | 11 | 51 | 120 | 20 | 16 | 194 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 58 | 0 | 0 | 7 | 0 | 0 | 10 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 371 | 38 | 0 | 250 | 4 | 0 | 171 | 10 | 0 | 273 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 491 | 511 | | 599 | 526 | | 729 | 733 | | 827 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.03 | | 0.15 | 0.00 | | 0.12 | 0.01 | | c0.16 | |
| v/c Ratio | | 0.76 | 0.08 | | 0.42 | 0.01 | | 0.23 | 0.01 | | 0.33 | |
| Uniform Delay, d1 | | 18.5 | 13.9 | | 15.9 | 13.6 | | 9.5 | 8.4 | | 10.0 | |
| Progression Factor | | 1.79 | 3.63 | | 0.96 | 0.95 | | 0.16 | 0.21 | | 1.06 | |
| Incremental Delay, d2 | | 8.1 | 0.2 | | 2.1 | 0.0 | | 0.1 | 0.0 | | 1.1 | |
| Delay (s) | | 41.3 | 50.8 | | 17.4 | 13.0 | | 1.6 | 1.7 | | 11.6 | |
| Level of Service | | D | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 43.2 | | | 17.2 | | | 1.6 | | | 11.6 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 23.4 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 72.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 167 | 45 | 96 | 8 | 16 | 9 | 43 | 225 | 8 | 21 | 481 | 209 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.99 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1873 | 1440 | | 1782 | | | 1991 | | | 1976 | 1382 |
| Flt Permitted | | 0.81 | 1.00 | | 0.93 | | | 0.88 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1573 | 1440 | | 1686 | | | 1762 | | | 1946 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 186 | 50 | 107 | 9 | 18 | 10 | 48 | 250 | 9 | 23 | 534 | 232 |
| RTOR Reduction (vph) | 0 | 0 | 63 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 92 |
| Lane Group Flow (vph) | 0 | 236 | 44 | 0 | 30 | 0 | 0 | 305 | 0 | 0 | 557 | 140 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 690 | 598 | | 441 | | | 867 | | | 958 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.10 | 0.03 | | 0.02 | | | 0.17 | | | c0.29 | 0.10 |
| v/c Ratio | | 0.34 | 0.07 | | 0.07 | | | 0.35 | | | 0.58 | 0.21 |
| Uniform Delay, d1 | | 12.9 | 11.5 | | 18.0 | | | 10.1 | | | 11.7 | 9.3 |
| Progression Factor | | 1.02 | 1.85 | | 1.00 | | | 0.52 | | | 0.66 | 0.22 |
| Incremental Delay, d2 | | 1.1 | 0.2 | | 0.3 | | | 0.6 | | | 2.0 | 0.5 |
| Delay (s) | | 14.3 | 21.4 | | 18.3 | | | 5.9 | | | 9.7 | 2.6 |
| Level of Service | | B | C | | B | | | A | | | A | A |
| Approach Delay (s) | | 16.5 | | | 18.3 | | | 5.9 | | | 7.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.6 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 72.5% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 922 | 289 | 675 | 1189 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4575 | | 1621 | 3320 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.10 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4575 | | 173 | 3320 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 971 | 304 | 711 | 1252 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 58 |
| Lane Group Flow (vph) | 0 | 1226 | 0 | 711 | 1252 | 0 | 0 | 0 | 0 | 308 | 603 | 213 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 35.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Effective Green, g (s) | | 35.0 | | 74.9 | 74.9 | | | | | 28.1 | 28.1 | 28.1 |
| Actuated g/C Ratio | | 0.30 | | 0.65 | 0.65 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1392 | | 558 | 2162 | | | | | 364 | 712 | 352 |
| v/s Ratio Prot | | 0.27 | | c0.39 | 0.38 | | | | | | | |
| v/s Ratio Perm | | | | c0.44 | | | | | | 0.21 | 0.21 | 0.15 |
| v/c Ratio | | 0.88 | | 1.27 | 0.58 | | | | | 0.85 | 0.85 | 0.60 |
| Uniform Delay, d1 | | 38.0 | | 33.0 | 11.2 | | | | | 41.4 | 41.4 | 38.5 |
| Progression Factor | | 1.00 | | 0.85 | 2.08 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 8.3 | | 126.7 | 0.3 | | | | | 16.7 | 9.4 | 3.1 |
| Delay (s) | | 46.3 | | 154.6 | 23.6 | | | | | 58.1 | 50.8 | 41.6 |
| Level of Service | | D | | F | C | | | | | E | D | D |
| Approach Delay (s) | | 46.3 | | | 71.0 | | | 0.0 | | | 50.6 | |
| Approach LOS | | D | | | E | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 58.4 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 1.12 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 119.8% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1094 | 0 | 0 | 1435 | 271 | 430 | 351 | 393 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.95 | 1.00 | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 0.98 | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (prot) | 3144 | 3353 | | | 3241 | 1489 | | 4492 | | | | |
| Flt Permitted | 0.07 | 1.00 | | | 1.00 | 1.00 | | 0.98 | | | | |
| Satd. Flow (perm) | 220 | 3353 | | | 3241 | 1489 | | 4492 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1152 | 0 | 0 | 1511 | 285 | 453 | 369 | 414 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 68 | 0 | 75 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1152 | 0 | 0 | 1511 | 217 | 0 | 1161 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | Perm | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | 6 | 8 | | | | | |
| Actuated Green, G (s) | 74.0 | 74.0 | | | 54.1 | 54.1 | | 29.0 | | | | |
| Effective Green, g (s) | 74.0 | 74.0 | | | 54.1 | 54.1 | | 29.0 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.47 | 0.47 | | 0.25 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | 7.0 | | 5.0 | | | | |
| Lane Grp Cap (vph) | 495 | 2158 | | | 1525 | 700 | | 1133 | | | | |
| v/s Ratio Prot | c0.09 | 0.34 | | | c0.47 | | | | | | | |
| v/s Ratio Perm | 0.38 | | | | | 0.15 | | 0.26 | | | | |
| v/c Ratio | 0.73 | 0.53 | | | 0.99 | 0.31 | | 1.02 | | | | |
| Uniform Delay, d1 | 31.7 | 11.1 | | | 30.2 | 18.9 | | 43.0 | | | | |
| Progression Factor | 1.55 | 0.03 | | | 0.91 | 1.06 | | 1.00 | | | | |
| Incremental Delay, d2 | 2.6 | 0.5 | | | 5.1 | 0.1 | | 33.2 | | | | |
| Delay (s) | 51.9 | 0.7 | | | 32.6 | 20.1 | | 76.2 | | | | |
| Level of Service | D | A | | | C | C | | E | | | | |
| Approach Delay (s) | | 12.9 | | | 30.6 | | | 76.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.1 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.96 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | | Sum of lost time (s) | | | 18.0 | | |
| Intersection Capacity Utilization | | | 119.8% | | | | ICU Level of Service | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & S Ashland





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 774 | 408 | 104 | 1197 | 100 | 227 | 179 | 66 | 85 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1313 | 1602 | 3284 | | 1578 | 3002 | | 1540 | 2941 | |
| Flt Permitted | 0.11 | 1.00 | 1.00 | 0.34 | 1.00 | | 0.39 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 174 | 3273 | 1313 | 580 | 3284 | | 654 | 3002 | | 961 | 2941 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 815 | 429 | 109 | 1260 | 105 | 239 | 188 | 69 | 89 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 6 | 0 | 0 | 38 | 0 | 0 | 107 | 0 |
| Lane Group Flow (vph) | 142 | 815 | 256 | 109 | 1359 | 0 | 239 | 219 | 0 | 89 | 191 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | | pm+pt | | pm+pt | | pm+pt | | pm+pt | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 64.8 | 52.2 | 68.6 | 43.4 | 34.3 | | 38.2 | 26.4 | | 26.6 | 18.3 | |
| Effective Green, g (s) | 64.8 | 52.2 | 68.6 | 43.4 | 34.3 | | 38.2 | 26.4 | | 26.6 | 18.3 | |
| Actuated g/C Ratio | 0.56 | 0.45 | 0.60 | 0.38 | 0.30 | | 0.33 | 0.23 | | 0.23 | 0.16 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 425 | 1486 | 783 | 300 | 979 | | 349 | 689 | | 264 | 468 | |
| v/s Ratio Prot | c0.08 | c0.25 | 0.05 | 0.03 | c0.41 | | c0.10 | 0.07 | | 0.02 | 0.07 | |
| v/s Ratio Perm | 0.11 | | 0.15 | 0.11 | | | c0.13 | | | 0.05 | | |
| v/c Ratio | 0.33 | 0.55 | 0.33 | 0.36 | 1.39 | | 0.68 | 0.32 | | 0.34 | 0.41 | |
| Uniform Delay, d1 | 17.5 | 22.8 | 11.6 | 23.9 | 40.4 | | 30.5 | 36.8 | | 36.1 | 43.5 | |
| Progression Factor | 0.78 | 0.78 | 1.37 | 1.00 | 1.00 | | 1.04 | 1.06 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 1.1 | 0.2 | 0.8 | 181.2 | | 5.2 | 0.9 | | 0.8 | 2.1 | |
| Delay (s) | 15.3 | 18.9 | 16.1 | 24.7 | 221.5 | | 37.0 | 39.9 | | 36.8 | 45.5 | |
| Level of Service | B | B | B | C | F | | D | D | | D | D | |
| Approach Delay (s) | | 17.7 | | | 207.0 | | | 38.5 | | | 43.5 | |
| Approach LOS | | B | | | F | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 97.6 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 19.0 | | |
| Intersection Capacity Utilization | | | 88.9% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont St & S Ashland



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 250 | 367 | 186 | 441 | 113 | 362 | 340 | 107 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 2925 | | 1653 | 3267 | | 1620 | 3381 | | 1580 | 3183 | |
| Flt Permitted | 0.39 | 1.00 | | 0.18 | 1.00 | | 0.32 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 698 | 2925 | | 314 | 3267 | | 544 | 3381 | | 802 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 196 | 464 | 119 | 381 | 358 | 113 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 225 | 0 | 0 | 19 | 0 | 0 | 26 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 424 | 0 | 196 | 564 | 0 | 381 | 445 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.5 | 28.8 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 35.5 | 28.8 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.31 | 0.25 | | 0.41 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 274 | 733 | | 291 | 1026 | | 454 | 1299 | | 334 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.08 | 0.17 | | c0.15 | 0.13 | | 0.05 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | c0.19 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.18 | 0.58 | | 0.67 | 0.55 | | 0.84 | 0.34 | | 0.65 | 0.54 | |
| Uniform Delay, d1 | 28.3 | 37.8 | | 24.9 | 32.7 | | 20.8 | 25.1 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.97 | |
| Incremental Delay, d2 | 0.4 | 3.3 | | 6.3 | 2.1 | | 13.1 | 0.7 | | 4.2 | 2.2 | |
| Delay (s) | 28.7 | 41.1 | | 31.2 | 34.8 | | 33.9 | 25.8 | | 32.9 | 36.4 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 40.2 | | | 33.9 | | | 29.4 | | | 35.3 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 82.5% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 603 | 293 | 10 | 376 | 66 | 720 | 355 | 9 | 198 | 625 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.96 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2967 | | | 3034 | | 1452 | 3229 | | 1523 | 2874 | |
| Flt Permitted | | 0.71 | | | 0.92 | | 0.18 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | | 2106 | | | 2802 | | 271 | 3229 | | 773 | 2874 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 670 | 326 | 11 | 418 | 73 | 800 | 394 | 10 | 220 | 694 | 203 |
| RTOR Reduction (vph) | 0 | 70 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 0 | 1043 | 0 | 0 | 481 | 0 | 800 | 401 | 0 | 220 | 855 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Effective Green, g (s) | | 25.0 | | | 17.0 | | 28.0 | 24.0 | | 28.0 | 24.0 | |
| Actuated g/C Ratio | | 0.38 | | | 0.26 | | 0.43 | 0.37 | | 0.43 | 0.37 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 863 | | | 733 | | 189 | 1192 | | 379 | 1061 | |
| v/s Ratio Prot | | c0.07 | | | | | c0.26 | 0.12 | | 0.04 | 0.30 | |
| v/s Ratio Perm | | c0.39 | | | 0.17 | | c1.56 | | | 0.21 | | |
| v/c Ratio | | 1.21 | | | 0.66 | | 4.23 | 0.34 | | 0.58 | 0.81 | |
| Uniform Delay, d1 | | 20.0 | | | 21.4 | | 16.7 | 14.8 | | 13.0 | 18.4 | |
| Progression Factor | | 1.00 | | | 1.47 | | 1.11 | 0.87 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 104.9 | | | 0.4 | | 1455.9 | 0.1 | | 6.4 | 6.6 | |
| Delay (s) | | 124.9 | | | 31.9 | | 1474.4 | 12.9 | | 19.4 | 25.0 | |
| Level of Service | | F | | | C | | F | B | | B | C | |
| Approach Delay (s) | | 124.9 | | | 31.9 | | | 984.0 | | | 23.9 | |
| Approach LOS | | F | | | C | | | F | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 347.2 | | | | | HCM Level of Service | | | F | | |
| HCM Volume to Capacity ratio | | 2.79 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | 124.4% | | | | | ICU Level of Service | | | H | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont St & Halsted Street

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 67 | 198 | 222 | 337 | 167 | 28 | 414 | 1147 | 993 | 35 | 866 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.98 | | 1.00 | 0.93 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 1840 | | 1601 | 1992 | | 1676 | 3013 | | 1437 | 3282 | |
| Flt Permitted | 0.63 | 1.00 | | 0.34 | 1.00 | | 0.22 | 1.00 | | 0.13 | 1.00 | |
| Satd. Flow (perm) | 1128 | 1840 | | 574 | 1992 | | 382 | 3013 | | 195 | 3282 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 204 | 229 | 347 | 172 | 29 | 427 | 1182 | 1024 | 36 | 893 | 72 |
| RTOR Reduction (vph) | 0 | 57 | 0 | 0 | 9 | 0 | 0 | 240 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 69 | 376 | 0 | 347 | 192 | 0 | 427 | 1966 | 0 | 36 | 956 | 0 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 24.0 | 24.0 | | 24.0 | 24.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.37 | 0.37 | | 0.37 | 0.37 | | 0.48 | 0.48 | | 0.48 | 0.48 | |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 416 | 679 | | 212 | 736 | | 182 | 1437 | | 93 | 1565 | |
| v/s Ratio Prot | | 0.20 | | | 0.10 | | | 0.65 | | | 0.29 | |
| v/s Ratio Perm | 0.06 | | | 0.60 | | | 1.12 | | | 0.18 | | |
| v/c Ratio | 0.17 | 0.55 | | 1.64 | 0.26 | | 2.35 | 1.37 | | 0.39 | 0.61 | |
| Uniform Delay, d1 | 13.8 | 16.3 | | 20.5 | 14.3 | | 17.0 | 17.0 | | 10.9 | 12.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.33 | 1.34 | | 1.00 | 1.00 | | 1.04 | 0.96 | |
| Incremental Delay, d2 | 0.9 | 3.2 | | 288.5 | 0.1 | | 622.5 | 170.2 | | 4.3 | 0.6 | |
| Delay (s) | 14.6 | 19.5 | | 315.9 | 19.2 | | 639.5 | 187.2 | | 15.6 | 12.7 | |
| Level of Service | B | B | | F | B | | F | F | | B | B | |
| Approach Delay (s) | | 18.8 | | | 207.1 | | | 260.5 | | | 12.8 | |
| Approach LOS | | B | | | F | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 175.4 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 2.04 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | | 10.0 | | |
| Intersection Capacity Utilization | | | 133.3% | | | ICU Level of Service | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  | | | |  | | |  | |
| Volume (vph) | 2 | 785 | 455 | 550 | 18 | 3 | 10 | 9 | 47 | 9 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 0.95 | | 0.95 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | 1.00 | | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | | 1.00 | | | | 0.91 | | | 0.94 | |
| Flt Protected | | 1.00 | | 0.98 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | | 3065 | | | | 1810 | | | 1824 | |
| Flt Permitted | | 0.95 | | 0.59 | | | | 0.96 | | | 0.89 | |
| Satd. Flow (perm) | | 3009 | | 1850 | | | | 1750 | | | 1671 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 826 | 479 | 579 | 19 | 3 | 11 | 9 | 49 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 38 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 828 | 0 | 1075 | 0 | 0 | 0 | 34 | 0 | 0 | 13 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | custom | | | | | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 7 | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 18.0 | | 27.0 | | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.28 | | 0.42 | | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 5.0 | | 5.0 | | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 833 | | 881 | | | | 377 | | | 360 | |
| v/s Ratio Prot | | | | c0.11 | | | | | | | | |
| v/s Ratio Perm | | 0.28 | | c0.39 | | | | c0.02 | | | 0.01 | |
| v/c Ratio | | 0.99 | | 2.29dl | | | | 0.09 | | | 0.04 | |
| Uniform Delay, d1 | | 23.4 | | 19.0 | | | | 20.4 | | | 20.2 | |
| Progression Factor | | 1.39 | | 0.83 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 8.1 | | 108.4 | | | | 0.5 | | | 0.2 | |
| Delay (s) | | 40.7 | | 124.2 | | | | 20.9 | | | 20.4 | |
| Level of Service | | D | | F | | | | C | | | C | |
| Approach Delay (s) | | 40.7 | | 124.2 | | | | 20.9 | | | 20.4 | |
| Approach LOS | | D | | F | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 762.3 | | HCM Level of Service | | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 158.4% | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

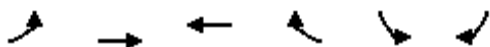


| Movement | SBR2 | NEL | NER |
|------------------------|------|--------|------|
| Lane Configurations | | | |
| Volume (vph) | 5 | 3 | 1155 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | |
| Lane Util. Factor | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | |
| Frt | | 0.87 | |
| Flt Protected | | 1.00 | |
| Satd. Flow (prot) | | 1557 | |
| Flt Permitted | | 1.00 | |
| Satd. Flow (perm) | | 1557 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 3 | 1216 |
| RTOR Reduction (vph) | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1219 | 0 |
| Confl. Peds. (#/hr) | | | |
| Confl. Bikes (#/hr) | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% |
| Turn Type | | | |
| Protected Phases | | 3 | |
| Permitted Phases | | | |
| Actuated Green, G (s) | | 10.0 | |
| Effective Green, g (s) | | 10.0 | |
| Actuated g/C Ratio | | 0.15 | |
| Clearance Time (s) | | 5.0 | |
| Lane Grp Cap (vph) | | 240 | |
| v/s Ratio Prot | | c0.78 | |
| v/s Ratio Perm | | | |
| v/c Ratio | | 5.08 | |
| Uniform Delay, d1 | | 27.5 | |
| Progression Factor | | 1.23 | |
| Incremental Delay, d2 | | 1836.5 | |
| Delay (s) | | 1870.3 | |
| Level of Service | | F | |
| Approach Delay (s) | | 1870.3 | |
| Approach LOS | | F | |
| Intersection Summary | | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|-------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 355 | 1614 | 774 | 63 | 96 | 257 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3291 | 3283 | | 1660 | 1485 |
| Flt Permitted | | 0.61 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2011 | 3283 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 394 | 1793 | 860 | 70 | 107 | 286 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 2187 | 921 | 0 | 107 | 158 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Effective Green, g (s) | | 40.0 | 40.0 | | 17.0 | 17.0 |
| Actuated g/C Ratio | | 0.62 | 0.62 | | 0.26 | 0.26 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1238 | 2020 | | 434 | 388 |
| v/s Ratio Prot | | | 0.28 | | 0.06 | |
| v/s Ratio Perm | | c1.09 | | | | c0.11 |
| v/c Ratio | | 1.77 | 0.46 | | 0.25 | 0.41 |
| Uniform Delay, d1 | | 12.5 | 6.7 | | 18.9 | 19.8 |
| Progression Factor | | 1.98 | 0.93 | | 1.27 | 1.54 |
| Incremental Delay, d2 | | 345.3 | 0.7 | | 1.3 | 3.1 |
| Delay (s) | | 370.0 | 6.9 | | 25.4 | 33.7 |
| Level of Service | | F | A | | C | C |
| Approach Delay (s) | | 370.0 | 6.9 | | 31.4 | |
| Approach LOS | | F | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 235.9 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.36 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 98.3% | | ICU Level of Service | | F |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013













| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 104 | 1609 | 747 | 152 | 265 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3122 | 3106 | | 1506 | 1343 |
| Flt Permitted | | 0.77 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2402 | 3106 | | 1506 | 1343 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 109 | 1694 | 786 | 160 | 279 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 26 | 0 | 0 | 64 |
| Lane Group Flow (vph) | 0 | 1803 | 920 | 0 | 279 | 35 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 34.0 | 34.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.35 | 0.35 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1256 | 1625 | | 533 | 475 |
| v/s Ratio Prot | | | 0.30 | | 0.19 | |
| v/s Ratio Perm | | 0.75 | | | | 0.03 |
| v/c Ratio | | 1.44 | 0.57 | | 0.52 | 0.07 |
| Uniform Delay, d1 | | 15.5 | 10.5 | | 16.7 | 13.9 |
| Progression Factor | | 1.10 | 1.32 | | 1.64 | 3.39 |
| Incremental Delay, d2 | | 196.4 | 1.1 | | 3.2 | 0.3 |
| Delay (s) | | 213.5 | 15.0 | | 30.5 | 47.4 |
| Level of Service | | F | B | | C | D |
| Approach Delay (s) | | 213.5 | 15.0 | | 35.0 | |
| Approach LOS | | F | B | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 131.9 | | HCM Level of Service | F |
| HCM Volume to Capacity ratio | | | 1.07 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 102.6% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Ave

























1/14/2013

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 1404 | 329 | 121 | 771 | 222 | 58 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.97 | |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 2417 | | 1788 | 2506 | 1749 | |
| Flt Permitted | 1.00 | | 0.13 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 2417 | | 243 | 2506 | 1749 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1433 | 336 | 123 | 787 | 227 | 59 |
| RTOR Reduction (vph) | 13 | 0 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 1756 | 0 | 123 | 787 | 275 | 0 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Effective Green, g (s) | 31.0 | | 31.0 | 31.0 | 24.0 | |
| Actuated g/C Ratio | 0.48 | | 0.48 | 0.48 | 0.37 | |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 1153 | | 116 | 1195 | 646 | |
| v/s Ratio Prot | c0.73 | | | 0.31 | c0.16 | |
| v/s Ratio Perm | | | 0.51 | | | |
| v/c Ratio | 1.52 | | 1.06 | 0.66 | 0.43 | |
| Uniform Delay, d1 | 17.0 | | 17.0 | 13.0 | 15.3 | |
| Progression Factor | 1.52 | | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 235.7 | | 100.7 | 2.9 | 2.0 | |
| Delay (s) | 261.5 | | 117.7 | 15.8 | 17.4 | |
| Level of Service | F | | F | B | B | |
| Approach Delay (s) | 261.5 | | | 29.6 | 17.4 | |
| Approach LOS | F | | | C | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 166.8 | | HCM Level of Service | | F |
| HCM Volume to Capacity ratio | | 1.04 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 10.0 |
| Intersection Capacity Utilization | | 113.9% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   |  |  |   |  | |  |  | |   | |
| Volume (vph) | 1 | 1680 | 84 | 112 | 875 | 1 | 73 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.29 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 583 | 3431 | 1479 | 128 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1867 | 93 | 124 | 972 | 1 | 81 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 140 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1867 | 66 | 124 | 972 | 1 | 0 | 81 | 34 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 49.4 | 49.4 | 49.4 | 67.1 | 67.1 | 67.1 | | 9.9 | 9.9 | | | |
| Effective Green, g (s) | 49.4 | 49.4 | 49.4 | 67.1 | 67.1 | 67.1 | | 9.9 | 9.9 | | | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.79 | 0.79 | 0.79 | | 0.12 | 0.12 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 339 | 1994 | 860 | 354 | 2621 | 1208 | | 180 | 175 | | | |
| v/s Ratio Prot | | c0.54 | | 0.06 | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.22 | | 0.00 | | c0.05 | 0.02 | | | |
| v/c Ratio | 0.00 | 0.94 | 0.08 | 0.35 | 0.37 | 0.00 | | 0.45 | 0.20 | | | |
| Uniform Delay, d1 | 7.5 | 16.4 | 7.8 | 14.8 | 2.7 | 1.9 | | 35.0 | 34.0 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 9.9 | 0.2 | 0.6 | 0.1 | 0.0 | | 1.8 | 0.6 | | | |
| Delay (s) | 7.5 | 26.2 | 8.0 | 15.4 | 2.8 | 1.9 | | 36.8 | 34.5 | | | |
| Level of Service | A | C | A | B | A | A | | D | C | | | |
| Approach Delay (s) | | 25.4 | | | 4.2 | | | 35.2 | | | 0.0 | |
| Approach LOS | | C | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 70.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















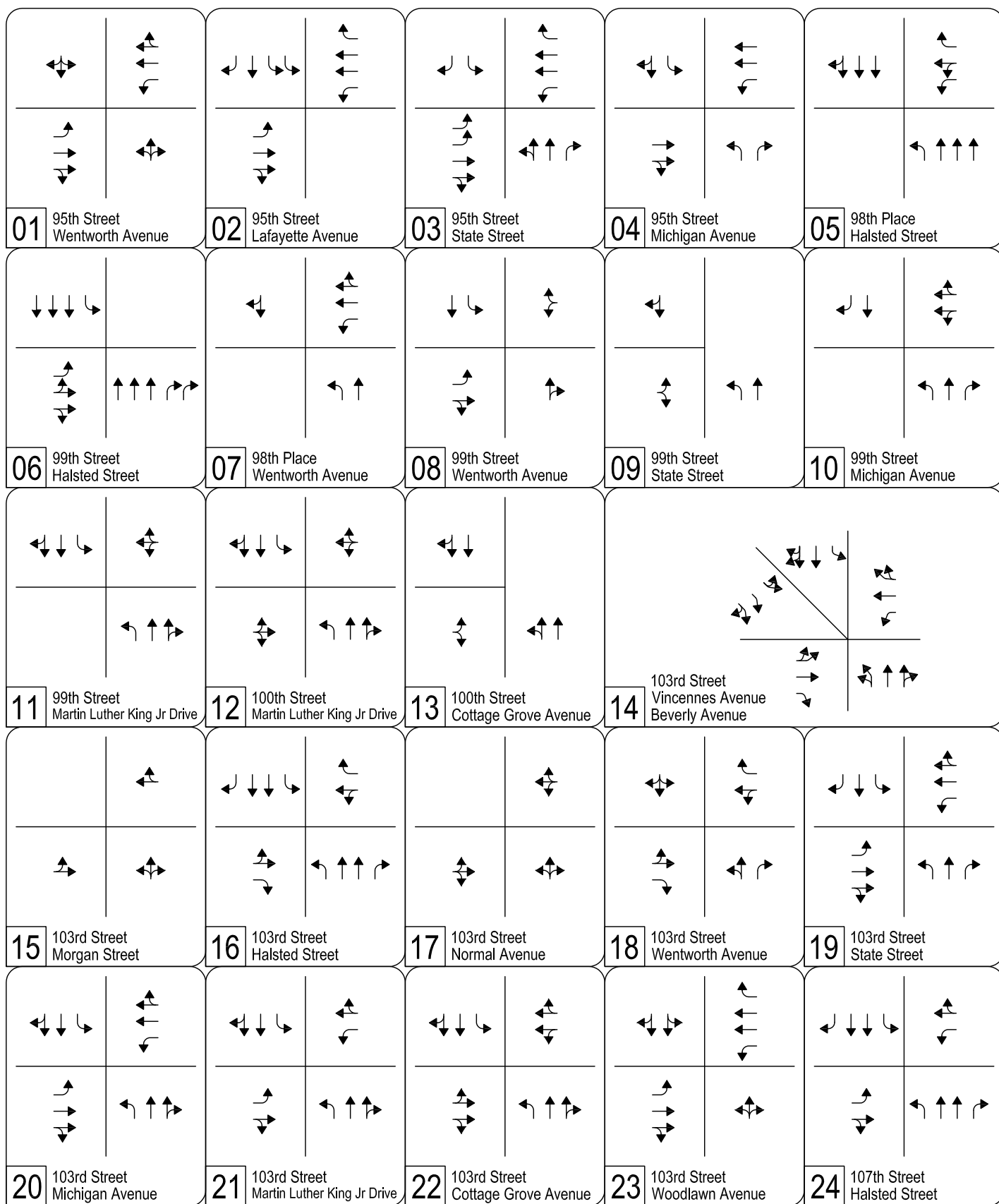
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 9 | 952 | 843 | 30 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3098 | 3083 | | 1533 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2923 | 3083 | | 1533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 10 | 1058 | 937 | 33 | 79 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 1068 | 967 | 0 | 86 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1072 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.00 | 0.44 | | 0.72 | |
| Uniform Delay, d1 | | 28.4 | 5.5 | | 40.5 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 26.6 | 0.2 | | 31.1 | |
| Delay (s) | | 55.0 | 0.2 | | 71.7 | |
| Level of Service | | E | A | | E | |
| Approach Delay (s) | | 55.0 | 0.2 | | 71.7 | |
| Approach LOS | | E | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.76 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 46.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

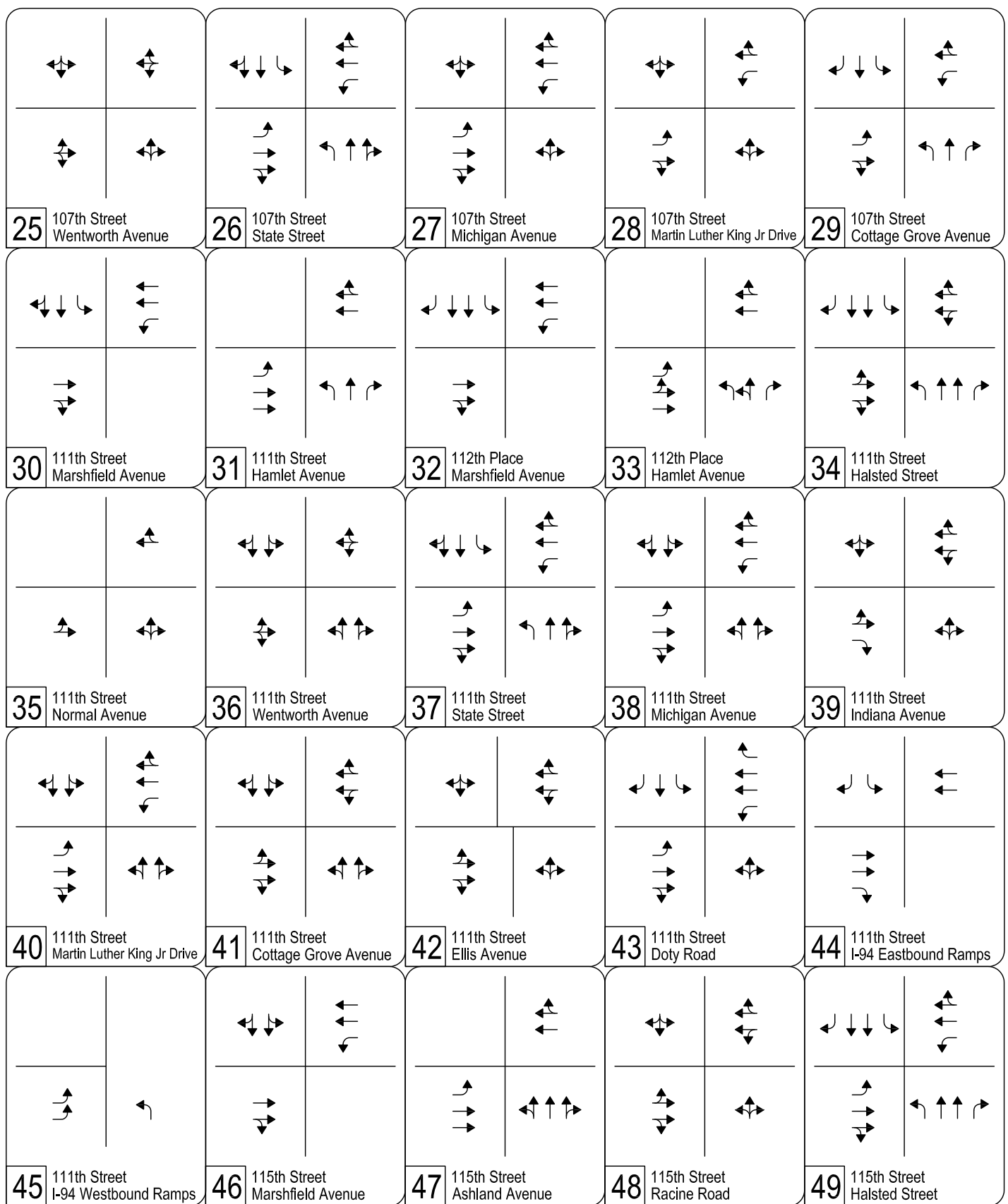
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 58 | 500 | 0 | 1 | 582 | 39 | 3 | 2 | 28 | 202 | 0 | 138 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1771 | | | 3341 | | | 1467 | | | 1670 | 1348 |
| Flt Permitted | | 0.87 | | | 0.95 | | | 0.88 | | | 0.88 | 1.00 |
| Satd. Flow (perm) | | 1550 | | | 3191 | | | 1296 | | | 1545 | 1348 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 64 | 556 | 0 | 1 | 647 | 43 | 3 | 2 | 31 | 224 | 0 | 153 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 28 | 0 | 0 | 0 | 103 |
| Lane Group Flow (vph) | 0 | 620 | 0 | 0 | 685 | 0 | 0 | 8 | 0 | 0 | 224 | 50 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Effective Green, g (s) | | 31.0 | | | 45.0 | | | 9.0 | | | 25.0 | 28.0 |
| Actuated g/C Ratio | | 0.36 | | | 0.53 | | | 0.11 | | | 0.29 | 0.33 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 565 | | | 1714 | | | 137 | | | 478 | 444 |
| v/s Ratio Prot | | | | | c0.07 | | | | | | c0.09 | |
| v/s Ratio Perm | | c0.40 | | | 0.15 | | | 0.01 | | | c0.05 | 0.04 |
| v/c Ratio | | 1.10 | | | 0.40 | | | 0.06 | | | 0.47 | 0.11 |
| Uniform Delay, d1 | | 27.0 | | | 11.9 | | | 34.2 | | | 24.6 | 19.9 |
| Progression Factor | | 1.00 | | | 1.37 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 67.2 | | | 0.1 | | | 0.8 | | | 3.3 | 0.5 |
| Delay (s) | | 94.2 | | | 16.4 | | | 35.0 | | | 27.8 | 20.4 |
| Level of Service | | F | | | B | | | D | | | C | C |
| Approach Delay (s) | | 94.2 | | | 16.4 | | | 35.0 | | | 24.8 | |
| Approach LOS | | F | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 46.6 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 78.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



Halsted Rail Alternative Mitigated (2030) Intersection Lane Geometry

Page 1 of 3

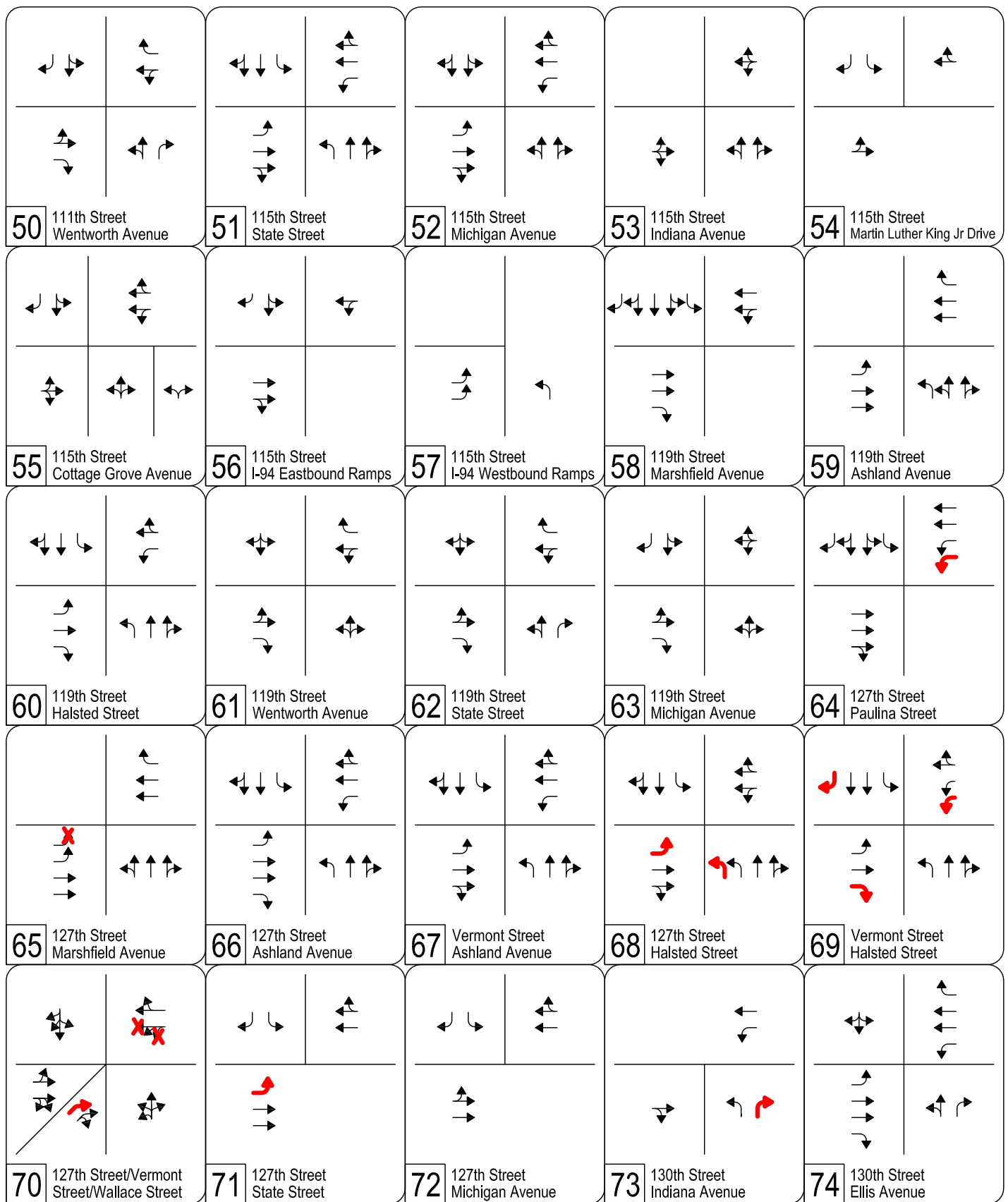
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Halsted Rail Alternative Mitigated (2030) Intersection Lane Geometry

Page 2 of 3

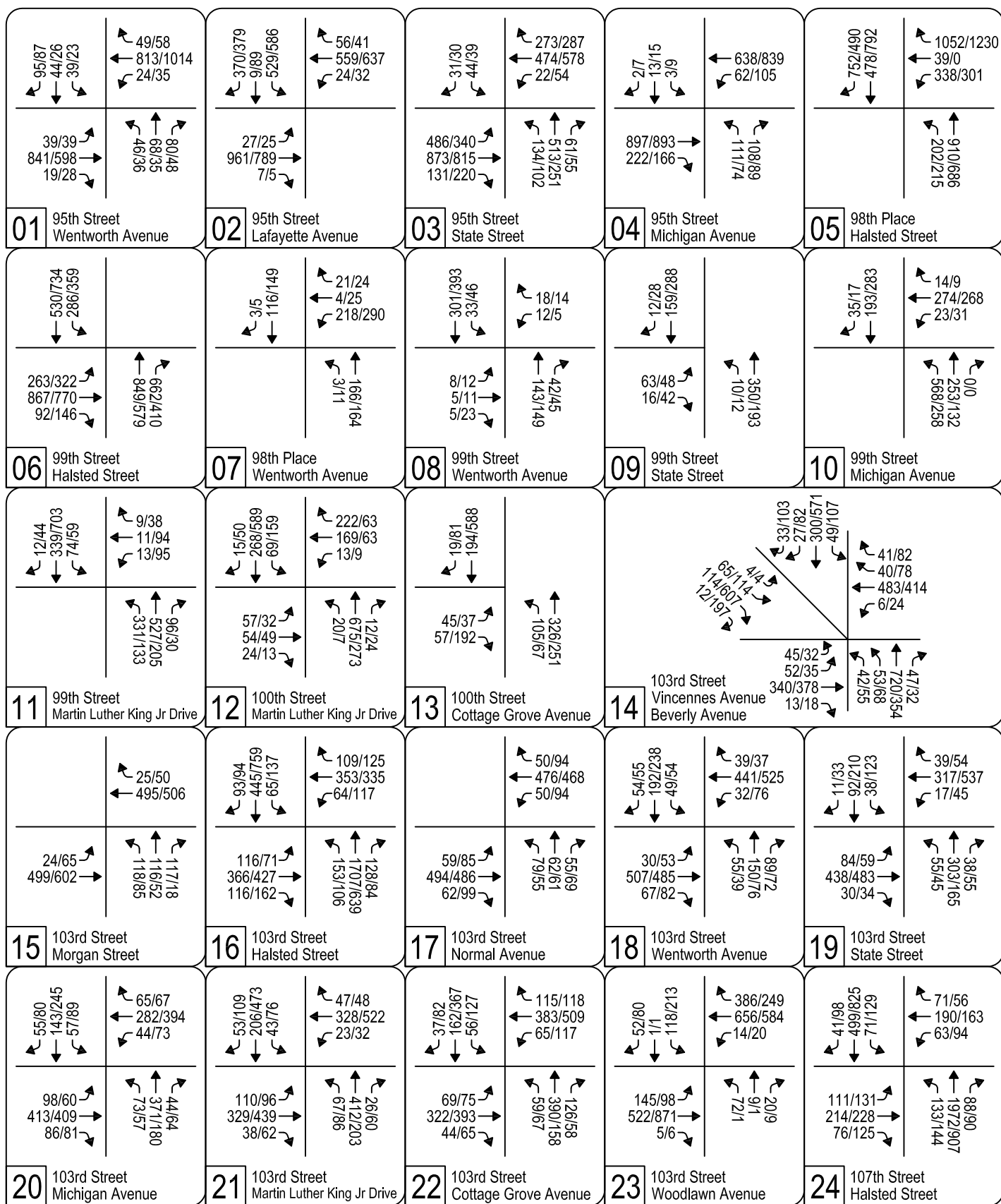
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Halsted Rail Alternative Mitigated (2030) Intersection Lane Geometry

Page 3 of 3

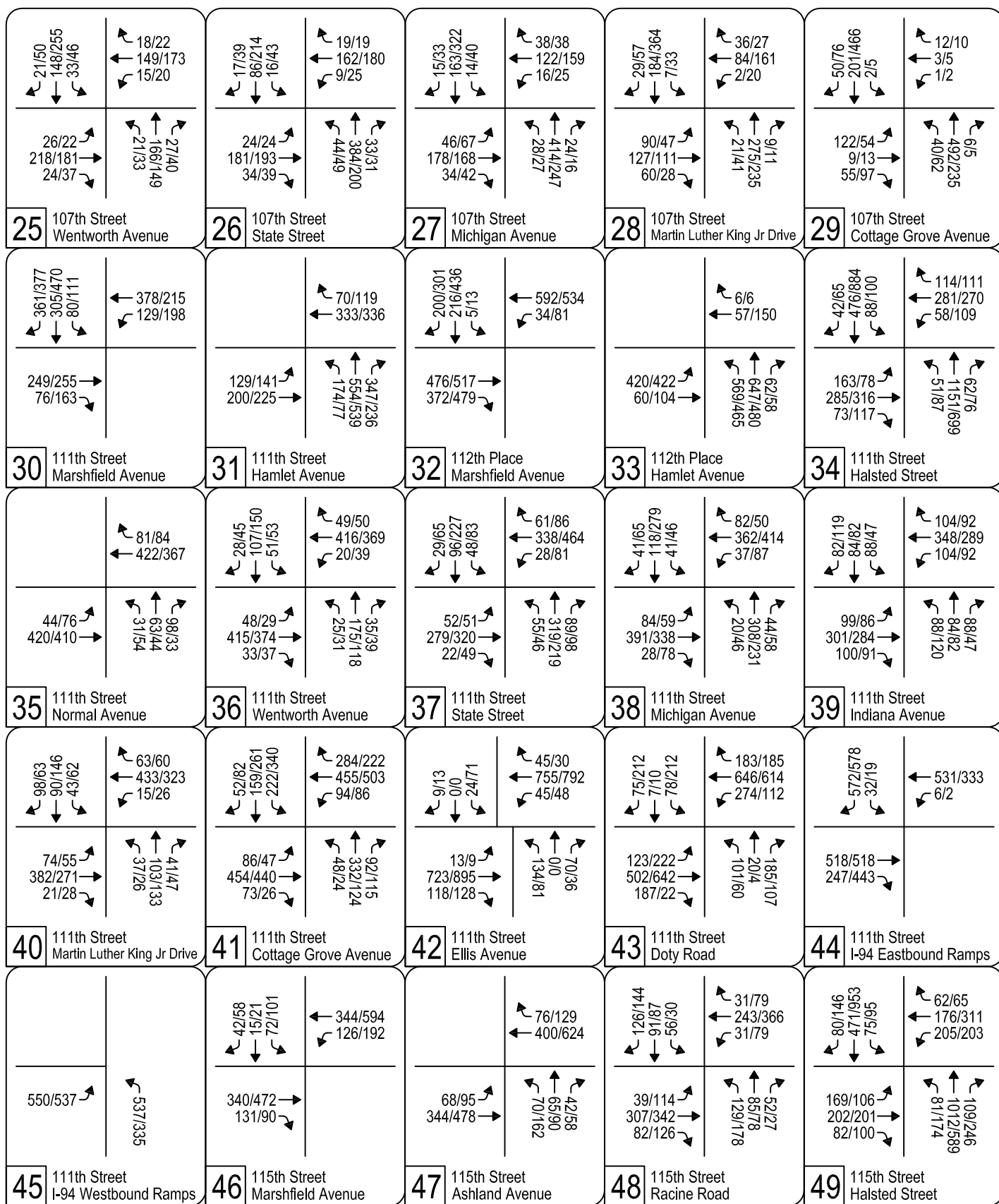
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Halsted Rail Alternative Mitigated (2030) Intersection Traffic Volumes

Page 1 of 3

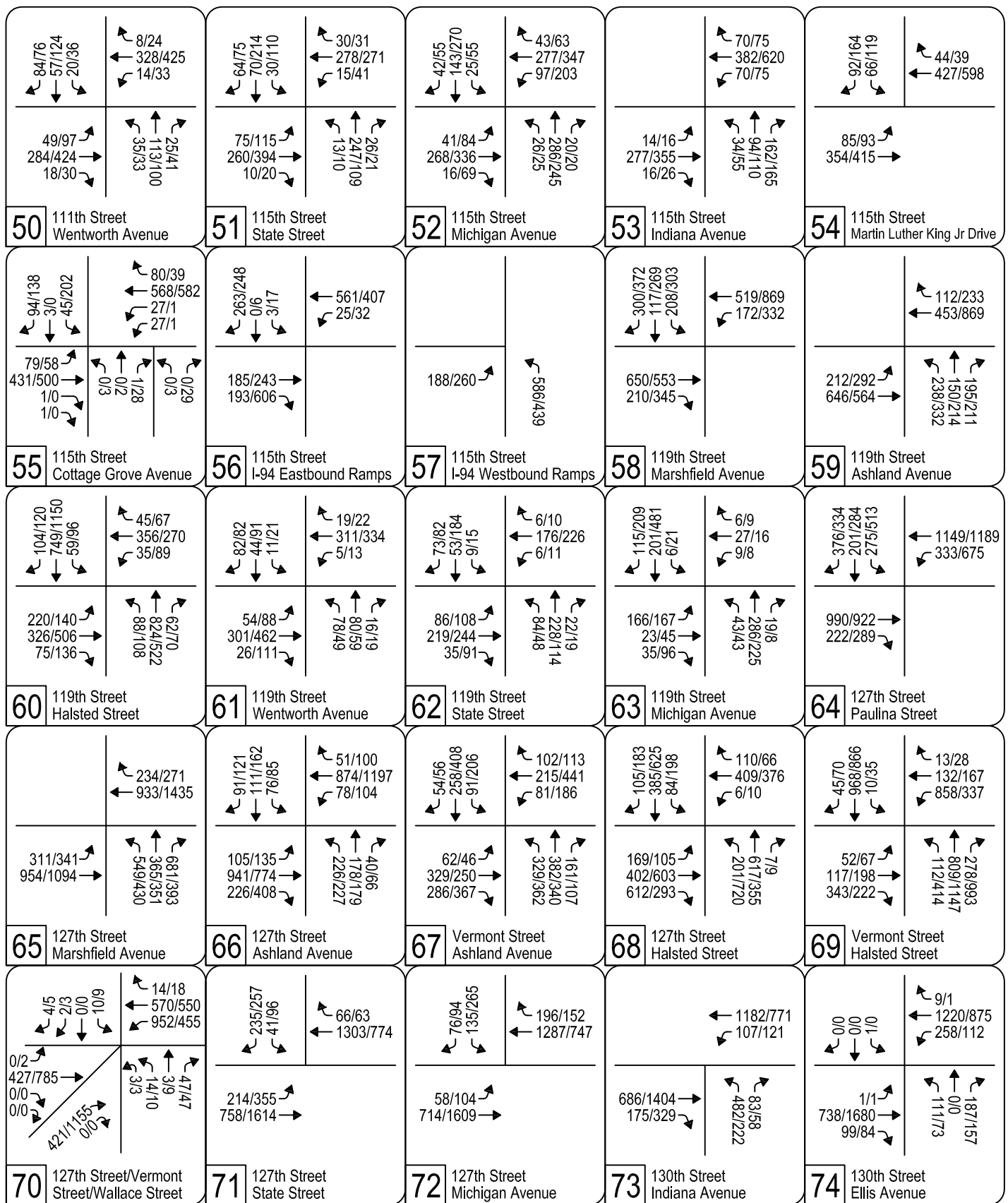
Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative Mitigated (2030) Intersection Traffic Volumes

Page 2 of 3

Legend: AM/PM Peak Hour Volumes



Halsted Rail Alternative Mitigated (2030) Intersection Traffic Volumes



















Page 3 of 3

Legend: AM/PM Peak Hour Volumes

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 841 | 19 | 24 | 813 | 49 | 46 | 68 | 80 | 39 | 44 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.94 | | | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1417 | 2976 | | 1592 | 2979 | | | 1755 | | | 1673 | |
| Flt Permitted | 0.25 | 1.00 | | 0.25 | 1.00 | | | 0.90 | | | 0.91 | |
| Satd. Flow (perm) | 369 | 2976 | | 417 | 2979 | | | 1596 | | | 1532 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 885 | 20 | 25 | 856 | 52 | 48 | 72 | 84 | 41 | 46 | 100 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 39 | 0 | 0 | 59 | 0 |
| Lane Group Flow (vph) | 41 | 903 | 0 | 25 | 901 | 0 | 0 | 165 | 0 | 0 | 128 | 0 |
| Confl. Peds. (#/hr) | 61 | | 11 | 11 | | 61 | 3 | | 5 | 5 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 11% | 7% | 0% | 0% | 6% | 2% | 2% | 7% | 4% | 5% | 7% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 193 | 1557 | | 218 | 1558 | | | 565 | | | 542 | |
| v/s Ratio Prot | | c0.30 | | | 0.30 | | | | | | | |
| v/s Ratio Perm | 0.11 | | | 0.06 | | | | c0.10 | | | 0.08 | |
| v/c Ratio | 0.21 | 0.58 | | 0.11 | 0.58 | | | 0.29 | | | 0.24 | |
| Uniform Delay, d1 | 8.3 | 10.6 | | 7.9 | 10.6 | | | 15.1 | | | 14.8 | |
| Progression Factor | 1.00 | 1.00 | | 0.83 | 1.16 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.5 | 1.6 | | 0.9 | 1.4 | | | 1.3 | | | 1.0 | |
| Delay (s) | 10.8 | 12.2 | | 7.5 | 13.6 | | | 16.4 | | | 15.8 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 12.1 | | | 13.5 | | | 16.4 | | | 15.8 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 27 | 961 | 7 | 24 | 559 | 56 | 0 | 0 | 0 | 529 | 9 | 370 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.91 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 778 | 3285 | | 1710 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Flt Permitted | 0.43 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 352 | 3285 | | 248 | 3138 | 512 | | | | 3100 | 1440 | 1399 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 28 | 1012 | 7 | 25 | 588 | 59 | 0 | 0 | 0 | 557 | 9 | 389 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 172 |
| Lane Group Flow (vph) | 28 | 1018 | 0 | 25 | 588 | 33 | 0 | 0 | 0 | 557 | 9 | 217 |
| Confl. Peds. (#/hr) | 354 | | 13 | 13 | | 354 | 22 | | 22 | 22 | | 22 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 100% | 4% | 0% | 0% | 9% | 100% | 0% | 0% | 0% | 7% | 25% | 5% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 162 | 1087 | | 634 | 1762 | 288 | | | | 715 | 332 | 323 |
| v/s Ratio Prot | 0.02 | c0.31 | | 0.01 | c0.19 | | | | | c0.18 | 0.01 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.06 | | | | | | 0.16 |
| v/c Ratio | 0.17 | 0.94 | | 0.04 | 0.33 | 0.12 | | | | 0.78 | 0.03 | 0.67 |
| Uniform Delay, d1 | 31.6 | 42.2 | | 15.1 | 15.4 | 13.4 | | | | 46.9 | 38.7 | 45.5 |
| Progression Factor | 0.80 | 0.82 | | 0.29 | 0.63 | 1.53 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 14.1 | | 0.1 | 0.3 | 0.5 | | | | 8.2 | 0.2 | 10.7 |
| Delay (s) | 27.2 | 48.9 | | 4.5 | 10.0 | 20.9 | | | | 55.1 | 38.9 | 56.2 |
| Level of Service | C | D | | A | A | C | | | | E | D | E |
| Approach Delay (s) | | 48.3 | | | 10.7 | | | 0.0 | | | 55.4 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 41.4 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | | 13.0 | | |
| Intersection Capacity Utilization | | | 52.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013






















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 486 | 873 | 131 | 22 | 474 | 273 | 134 | 513 | 61 | 44 | 0 | 31 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.65 | | 1.00 | 0.94 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3190 | 3107 | | 1555 | 2923 | 944 | | 3300 | 1417 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 512 | 919 | 138 | 23 | 499 | 287 | 141 | 540 | 64 | 46 | 0 | 33 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 158 | 0 | 0 | 25 | 0 | 0 | 31 |
| Lane Group Flow (vph) | 512 | 1049 | 0 | 23 | 499 | 129 | 0 | 681 | 39 | 46 | 0 | 2 |
| Confl. Peds. (#/hr) | 425 | | 21 | 21 | | 425 | 6 | | 34 | 34 | | 6 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 8% | 3% | 10% | 17% | 5% | 1% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 43.0 | 65.0 | | 9.0 | 31.0 | 31.0 | | 30.0 | 30.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.33 | 0.50 | | 0.07 | 0.24 | 0.24 | | 0.23 | 0.23 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1055 | 1554 | | 108 | 697 | 225 | | 762 | 327 | 53 | | 45 |
| v/s Ratio Prot | 0.16 | c0.34 | | 0.01 | c0.17 | | | c0.21 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.14 | | | 0.03 | | | 0.00 |
| v/c Ratio | 0.49 | 0.67 | | 0.21 | 0.72 | 0.57 | | 0.89 | 0.12 | 0.87 | | 0.05 |
| Uniform Delay, d1 | 34.7 | 24.5 | | 57.2 | 45.5 | 43.6 | | 48.5 | 39.5 | 60.5 | | 57.4 |
| Progression Factor | 0.75 | 0.20 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.90 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.7 | 1.1 | | 4.5 | 6.2 | 10.1 | | 14.9 | 0.7 | 76.0 | | 0.4 |
| Delay (s) | 26.9 | 6.0 | | 61.6 | 51.7 | 53.8 | | 60.7 | 36.2 | 136.5 | | 57.8 |
| Level of Service | C | A | | E | D | D | | E | D | F | | E |
| Approach Delay (s) | | 12.8 | | | 52.7 | | | 58.6 | | | 103.6 | |
| Approach LOS | | B | | | D | | | E | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.8 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | | Sum of lost time (s) | | | 13.0 | | |
| Intersection Capacity Utilization | | | 72.7% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue









1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |   | |  |   | |  | |  |  |  | |
| Volume (vph) | 0 | 897 | 222 | 62 | 638 | 0 | 111 | 0 | 108 | 3 | 13 | 2 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frbp, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.97 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.98 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2860 | | 1650 | 3005 | | 1390 | | 1465 | 1803 | 1943 | |
| Flt Permitted | | 1.00 | | 0.15 | 1.00 | | 0.75 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2860 | | 267 | 3005 | | 1093 | | 1465 | 1803 | 1943 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 997 | 247 | 69 | 709 | 0 | 123 | 0 | 120 | 3 | 14 | 2 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 1222 | 0 | 69 | 709 | 0 | 123 | 0 | 43 | 3 | 15 | 0 |
| Confl. Peds. (#/hr) | 49 | | 15 | 15 | | 49 | | | 12 | 12 | | |
| Heavy Vehicles (%) | 0% | 6% | 14% | 0% | 10% | 0% | 23% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | custom | | | custom | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | | | | 6 | | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Effective Green, g (s) | 60.0 | | | 60.0 | | | 32.0 | | | 32.0 | | |
| Actuated g/C Ratio | 0.60 | | | 0.60 | | | 0.32 | | | 0.32 | | |
| Clearance Time (s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Lane Grp Cap (vph) | 1716 | | | 160 | | | 350 | | | 469 | | |
| v/s Ratio Prot | c0.43 | | | 0.24 | | | | | | 0.01 | | |
| v/s Ratio Perm | | | | 0.26 | | | c0.11 | | | 0.03 | | |
| v/c Ratio | 0.71 | | | 0.43 | | | 0.35 | | | 0.09 | | |
| Uniform Delay, d1 | 14.0 | | | 10.8 | | | 26.0 | | | 23.8 | | |
| Progression Factor | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 2.5 | | | 8.3 | | | 0.6 | | | 2.8 | | |
| Delay (s) | 16.5 | | | 19.1 | | | 11.1 | | | 28.8 | | |
| Level of Service | B | | | B | | | B | | | C | | |
| Approach Delay (s) | 16.5 | | | 11.8 | | | 26.5 | | | 23.3 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 16.0 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.59 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 60.7% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|-------|------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 338 | 39 | 1052 | 202 | 910 | 0 | 0 | 478 | 752 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.91 | |
| Flt Protected | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Flt Permitted | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1525 | 1629 | 1479 | 1550 | 4368 | | | 3940 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 488 | 767 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 345 | 40 | 1073 | 206 | 929 | 0 | 0 | 1255 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 12 | | 8 | 8 | | 12 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 3% | 5% | 2% | 3% | 5% | 0% | 0% | 5% | 8% |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | 30.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | 31.0 | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | 0.30 | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | 5.0 | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 450 | 481 | 423 | 472 | 2746 | | | 1163 | |
| v/s Ratio Prot | | | | | | | c0.13 | 0.21 | | | c0.32 | |
| v/s Ratio Perm | | | | 0.23 | 0.02 | c0.73 | | | | | | |
| v/c Ratio | | | | 0.77 | 0.08 | 2.54 | 0.44 | 0.34 | | | 1.91dr | |
| Uniform Delay, d1 | | | | 33.7 | 26.7 | 37.5 | 29.3 | 9.2 | | | 37.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.66 | 2.39 | | | 1.00 | |
| Incremental Delay, d2 | | | | 11.8 | 0.3 | 698.4 | 2.0 | 0.2 | | | 50.5 | |
| Delay (s) | | | | 45.5 | 27.1 | 735.9 | 21.3 | 22.2 | | | 87.5 | |
| Level of Service | | | | D | C | F | C | C | | | F | |
| Approach Delay (s) | | 0.0 | | | 553.1 | | | 22.0 | | | 87.5 | |
| Approach LOS | | A | | | F | | | C | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 244.6 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.33 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | | Sum of lost time (s) | | 12.0 | | | | |
| Intersection Capacity Utilization | | 95.0% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 263 | 867 | 92 | 0 | 0 | 0 | 0 | 849 | 662 | 286 | 530 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 0.97 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1497 | 3184 | | | | | | 4368 | 2187 | 1583 | 4636 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 271 | 894 | 95 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 546 | 0 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 244 | 1009 | 0 | 0 | 0 | 0 | 0 | 875 | 682 | 295 | 546 | 0 |
| Confl. Peds. (#/hr) | 4 | | 14 | 14 | | 4 | 4 | | 3 | 3 | | 4 |
| Heavy Vehicles (%) | 7% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 8% | 6% | 0% |
| Turn Type | Perm | | | | | | Perm | | | Prot | | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 485 | 1031 | | | | | | 1165 | 583 | 467 | 2737 | |
| v/s Ratio Prot | | | | | | | | 0.20 | | c0.19 | 0.12 | |
| v/s Ratio Perm | 0.16 | 0.32 | | | | | | | c0.31 | | | |
| v/c Ratio | 0.50 | 0.98 | | | | | | 0.75 | 1.17 | 0.63 | 0.20 | |
| Uniform Delay, d1 | 28.7 | 35.1 | | | | | | 35.3 | 38.5 | 32.1 | 10.0 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 0.43 | 0.45 | 1.06 | 0.42 | |
| Incremental Delay, d2 | 3.7 | 23.4 | | | | | | 0.4 | 78.3 | 2.2 | 0.1 | |
| Delay (s) | 32.4 | 58.5 | | | | | | 15.5 | 95.8 | 36.1 | 4.3 | |
| Level of Service | C | E | | | | | | B | F | D | A | |
| Approach Delay (s) | | 53.5 | | | 0.0 | | | 50.7 | | | 15.4 | |
| Approach LOS | | D | | | A | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 43.5 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.92 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | | Sum of lost time (s) | | | 12.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  | |  |  | | |  | |
| Volume (vph) | 0 | 0 | 0 | 218 | 4 | 21 | 3 | 166 | 0 | 0 | 116 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | | | 1.00 | 0.98 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | 0.87 | | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1578 | 2709 | | 1285 | 1882 | | | 1961 | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.58 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1578 | 2709 | | 781 | 1882 | | | 1961 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 242 | 4 | 23 | 3 | 184 | 0 | 0 | 129 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 242 | 9 | 0 | 3 | 184 | 0 | 0 | 131 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 8% | 25% | 5% | 33% | 2% | 0% | 0% | 3% | 33% |
| Turn Type | | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | | | | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 40.0 | |
| Effective Green, g (s) | | | | 27.0 | 27.0 | | 50.0 | 50.0 | | | 46.0 | |
| Actuated g/C Ratio | | | | 0.32 | 0.32 | | 0.59 | 0.59 | | | 0.54 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 501 | 861 | | 501 | 1107 | | | 1061 | |
| v/s Ratio Prot | | | | | 0.00 | | 0.00 | c0.10 | | | 0.07 | |
| v/s Ratio Perm | | | | c0.15 | | | 0.00 | | | | | |
| v/c Ratio | | | | 0.48 | 0.01 | | 0.01 | 0.17 | | | 0.12 | |
| Uniform Delay, d1 | | | | 23.4 | 19.9 | | 10.0 | 8.0 | | | 9.6 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.06 | 1.18 | | | 1.00 | |
| Incremental Delay, d2 | | | | 3.3 | 0.0 | | 0.0 | 0.3 | | | 0.2 | |
| Delay (s) | | | | 26.7 | 19.9 | | 10.6 | 9.8 | | | 9.8 | |
| Level of Service | | | | C | B | | B | A | | | A | |
| Approach Delay (s) | | 0.0 | | | 26.0 | | | 9.8 | | | 9.8 | |
| Approach LOS | | A | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 33.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | |  |  | |
| Volume (vph) | 8 | 5 | 5 | 12 | 0 | 18 | 0 | 143 | 42 | 33 | 301 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1938 | 1809 | | | 1620 | | | 1686 | | 1595 | 1755 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.93 | | | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | 1502 | 1809 | | | 1543 | | | 1686 | | 1005 | 1755 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 8 | 5 | 5 | 13 | 0 | 19 | 0 | 151 | 44 | 35 | 317 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 8 | 7 | 0 | 0 | 19 | 0 | 0 | 183 | 0 | 35 | 317 | 0 |
| Confl. Peds. (#/hr) | | | 3 | 3 | | | 5 | | 2 | 2 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 6% | 0% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 477 | 575 | | | 490 | | | 793 | | 640 | 1032 | |
| v/s Ratio Prot | | 0.00 | | | | | | 0.11 | | 0.00 | c0.18 | |
| v/s Ratio Perm | 0.01 | | | | c0.01 | | | | | 0.03 | | |
| v/c Ratio | 0.02 | 0.01 | | | 0.04 | | | 0.23 | | 0.05 | 0.31 | |
| Uniform Delay, d1 | 19.9 | 19.9 | | | 20.0 | | | 13.4 | | 8.5 | 8.8 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.01 | 0.93 | |
| Incremental Delay, d2 | 0.1 | 0.0 | | | 0.1 | | | 0.7 | | 0.2 | 0.7 | |
| Delay (s) | 20.0 | 19.9 | | | 20.2 | | | 14.0 | | 8.8 | 8.9 | |
| Level of Service | B | B | | | C | | | B | | A | A | |
| Approach Delay (s) | | 19.9 | | | 20.2 | | | 14.0 | | | 8.9 | |
| Approach LOS | | B | | | C | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.21 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 40.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Volume (vph) | 63 | 16 | 10 | 350 | 159 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.97 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.96 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1787 | | 1767 | 1765 | 1634 | |
| Flt Permitted | 0.96 | | 0.64 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1787 | | 1187 | 1765 | 1634 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 70 | 18 | 11 | 389 | 177 | 13 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 11 | 389 | 186 | 0 |
| Confl. Peds. (#/hr) | | 2 | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 2% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 577 | | 657 | 978 | 905 | |
| v/s Ratio Prot | c0.04 | | | c0.22 | 0.11 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.13 | | 0.02 | 0.40 | 0.21 | |
| Uniform Delay, d1 | 15.6 | | 6.5 | 8.3 | 7.3 | |
| Progression Factor | 1.00 | | 0.32 | 0.51 | 1.16 | |
| Incremental Delay, d2 | 0.5 | | 0.0 | 1.1 | 0.4 | |
| Delay (s) | 16.0 | | 2.1 | 5.4 | 8.9 | |
| Level of Service | B | | A | A | A | |
| Approach Delay (s) | 16.0 | | | 5.3 | 8.9 | |
| Approach LOS | B | | | A | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 7.7 | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | | 0.30 | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | | 39.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th Street & Michigan Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 23 | 274 | 14 | 568 | 253 | 0 | 0 | 193 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 0.99 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3738 | | 1660 | 1752 | | | 1603 | 1298 |
| Flt Permitted | | | | | 1.00 | | 0.57 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3738 | | 1002 | 1752 | | | 1603 | 1298 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 26 | 304 | 16 | 631 | 281 | 0 | 0 | 214 | 39 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 342 | 0 | 631 | 281 | 0 | 0 | 214 | 17 |
| Confl. Peds. (#/hr) | | | | | | | | | 30 | 30 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 11% | 2% | 0% | 3% | 13% | 0% | 0% | 16% | 10% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1143 | | 679 | 1051 | | | 717 | 580 |
| v/s Ratio Prot | | | | | c0.09 | | c0.11 | 0.16 | | | 0.13 | |
| v/s Ratio Perm | | | | | | | c0.45 | | | | | 0.01 |
| v/c Ratio | | | | | 0.30 | | 0.93 | 0.27 | | | 0.30 | 0.03 |
| Uniform Delay, d1 | | | | | 22.5 | | 17.0 | 8.1 | | | 15.0 | 13.2 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.7 | | 21.0 | 0.6 | | | 1.1 | 0.1 |
| Delay (s) | | | | | 23.2 | | 38.0 | 8.7 | | | 16.1 | 13.3 |
| Level of Service | | | | | C | | D | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.2 | | | 29.0 | | | 15.6 | |
| Approach LOS | | A | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive


1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|-------|------|----------------------|------|------|-------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | | ↔ | | ↗ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 0 | 0 | 0 | 13 | 11 | 9 | 331 | 527 | 96 | 74 | 339 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1796 | | 1692 | 3237 | | 1707 | 3352 | |
| Flt Permitted | | | | | 0.98 | | 0.50 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | | | | 1796 | | 894 | 3237 | | 566 | 3352 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 14 | 12 | 10 | 368 | 586 | 107 | 82 | 377 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 29 | 0 | 368 | 673 | 0 | 82 | 387 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 6 | | 20 | 20 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 11% | 0% | 1% | 3% | 0% | 0% | 5% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 551 | | 563 | 1467 | | 416 | 1520 | |
| v/s Ratio Prot | | | | | c0.02 | | c0.06 | 0.21 | | 0.02 | 0.12 | |
| v/s Ratio Perm | | | | | | | c0.30 | | | 0.09 | | |
| v/c Ratio | | | | | 0.05 | | 0.65 | 0.46 | | 0.20 | 0.25 | |
| Uniform Delay, d1 | | | | | 18.3 | | 13.7 | 14.2 | | 12.3 | 12.7 | |
| Progression Factor | | | | | 1.00 | | 0.69 | 0.74 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 0.2 | | 5.3 | 0.9 | | 1.1 | 0.4 | |
| Delay (s) | | | | | 18.5 | | 14.8 | 11.4 | | 13.4 | 13.1 | |
| Level of Service | | | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 0.0 | | | 18.5 | | | 12.6 | | | 13.1 | |
| Approach LOS | | A | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 10.0 | | |
| Intersection Capacity Utilization | | | 56.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|------|-------|----------------------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↕ | | ↗ | ↕ | |
| Volume (vph) | 57 | 54 | 24 | 13 | 169 | 222 | 20 | 675 | 12 | 69 | 268 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1946 | | | 1626 | | 1596 | 3232 | | 1641 | 3131 | |
| Flt Permitted | | 0.68 | | | 0.99 | | 0.57 | 1.00 | | 0.33 | 1.00 | |
| Satd. Flow (perm) | | 1354 | | | 1613 | | 957 | 3232 | | 575 | 3131 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 60 | 57 | 25 | 14 | 178 | 234 | 21 | 711 | 13 | 73 | 282 | 16 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 132 | 0 | 0 | 367 | 0 | 21 | 722 | 0 | 73 | 293 | 0 |
| Confl. Peds. (#/hr) | | | | | | | | | 6 | 6 | | |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 12% | 2% | 2% | 0% | 2% | 0% | 4% | 5% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 451 | | | 538 | | 536 | 1810 | | 322 | 1753 | |
| v/s Ratio Prot | | | | | | | | c0.22 | | | 0.09 | |
| v/s Ratio Perm | | 0.10 | | | c0.23 | | 0.02 | | | 0.13 | | |
| v/c Ratio | | 0.29 | | | 0.68 | | 0.04 | 0.40 | | 0.23 | 0.17 | |
| Uniform Delay, d1 | | 18.5 | | | 21.6 | | 7.4 | 9.3 | | 8.3 | 8.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.17 | 0.06 | |
| Incremental Delay, d2 | | 1.6 | | | 6.9 | | 0.1 | 0.7 | | 1.6 | 0.2 | |
| Delay (s) | | 20.1 | | | 28.4 | | 7.6 | 10.0 | | 3.0 | 0.7 | |
| Level of Service | | C | | | C | | A | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 28.4 | | | 9.9 | | | 1.1 | |
| Approach LOS | | C | | | C | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 69.8% | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 45 | 57 | 105 | 326 | 194 | 19 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 50 | 63 | 117 | 362 | 216 | 21 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 113 | 237 | 241 | 144 | 93 | |
| Volume Left (vph) | 50 | 117 | 0 | 0 | 0 | |
| Volume Right (vph) | 63 | 0 | 0 | 0 | 21 | |
| Hadj (s) | -0.16 | 0.33 | 0.08 | 0.09 | -0.07 | |
| Departure Headway (s) | 5.3 | 5.4 | 5.1 | 5.4 | 5.2 | |
| Degree Utilization, x | 0.17 | 0.36 | 0.35 | 0.22 | 0.14 | |
| Capacity (veh/h) | 628 | 654 | 684 | 641 | 660 | |
| Control Delay (s) | 9.3 | 10.1 | 9.6 | 8.7 | 7.9 | |
| Approach Delay (s) | 9.3 | 9.9 | | 8.4 | | |
| Approach LOS | A | A | | A | | |
| Intersection Summary | | | | | | |
| Delay | | | 9.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 35.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 45 | 52 | 340 | 13 | 6 | 483 | 40 | 41 | 42 | 53 | 720 | 47 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1575 | 1731 | 1530 | 1710 | 1731 | 1487 | | | 1710 | 3289 | |
| Flt Permitted | | 0.11 | 1.00 | 1.00 | 0.54 | 1.00 | 1.00 | | | 0.39 | 1.00 | |
| Satd. Flow (perm) | | 187 | 1731 | 1530 | 967 | 1731 | 1487 | | | 700 | 3289 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 50 | 58 | 378 | 14 | 7 | 537 | 44 | 46 | 47 | 59 | 800 | 52 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 7 | 0 | 0 | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 108 | 378 | 7 | 7 | 537 | 58 | 0 | 0 | 106 | 847 | 0 |
| Confl. Peds. (#/hr) | | 5 | | | | | 5 | | | | | 6 |
| Heavy Vehicles (%) | 8% | 9% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Effective Green, g (s) | | 50.0 | 50.0 | 50.0 | 32.0 | 32.0 | 32.0 | | | 25.0 | 25.0 | |
| Actuated g/C Ratio | | 0.48 | 0.48 | 0.48 | 0.30 | 0.30 | 0.30 | | | 0.24 | 0.24 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 281 | 824 | 729 | 295 | 528 | 453 | | | 167 | 783 | |
| v/s Ratio Prot | | 0.05 | c0.22 | | | c0.31 | | | | | c0.26 | |
| v/s Ratio Perm | | 0.13 | | 0.00 | 0.01 | | 0.04 | | | 0.15 | | |
| v/c Ratio | | 0.38 | 0.46 | 0.01 | 0.02 | 1.02 | 0.13 | | | 0.63 | 1.08 | |
| Uniform Delay, d1 | | 20.3 | 18.4 | 14.5 | 25.6 | 36.5 | 26.4 | | | 35.9 | 40.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 1.8 | 0.0 | 0.1 | 43.5 | 0.6 | | | 17.0 | 56.8 | |
| Delay (s) | | 24.2 | 20.3 | 14.5 | 25.7 | 80.0 | 27.0 | | | 52.9 | 96.8 | |
| Level of Service | | C | C | B | C | F | C | | | D | F | |
| Approach Delay (s) | | | 21.0 | | | 71.9 | | | | | 91.9 | |
| Approach LOS | | | C | | | E | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 62.7 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 0.81 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 80.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 49 | 300 | 27 | 33 | 4 | 65 | 114 | 12 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3279 | | | | 1710 | 2621 | |
| Flt Permitted | 0.16 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 293 | 3279 | | | | 1710 | 2621 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 54 | 333 | 30 | 37 | 4 | 72 | 127 | 13 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 54 | 392 | 0 | 0 | 0 | 76 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Effective Green, g (s) | 24.5 | 24.5 | | | | 17.5 | 17.5 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | 0.17 | 0.17 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 68 | 765 | | | | 285 | 437 | |
| v/s Ratio Prot | | 0.12 | | | | 0.04 | | |
| v/s Ratio Perm | 0.18 | | | | | | c0.05 | |
| v/c Ratio | 0.79 | 0.51 | | | | 0.27 | 0.31 | |
| Uniform Delay, d1 | 37.9 | 35.1 | | | | 38.2 | 38.4 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 61.4 | 2.4 | | | | 2.3 | 1.8 | |
| Delay (s) | 99.3 | 37.5 | | | | 40.4 | 40.2 | |
| Level of Service | F | D | | | | D | D | |
| Approach Delay (s) | | 44.9 | | | | 40.3 | | |
| Approach LOS | | D | | | | D | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 24 | 499 | 0 | 0 | 495 | 25 | 118 | 116 | 117 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1653 | | | 1930 | | | 1771 | | | | |
| Flt Permitted | | 0.96 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1598 | | | 1930 | | | 1771 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 554 | 0 | 0 | 550 | 28 | 131 | 129 | 130 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 581 | 0 | 0 | 578 | 0 | 0 | 390 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Effective Green, g (s) | | 31.0 | | | 31.0 | | | 26.0 | | | | |
| Actuated g/C Ratio | | 0.48 | | | 0.48 | | | 0.40 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 762 | | | 920 | | | 708 | | | | |
| v/s Ratio Prot | | | | | 0.30 | | | | | | | |
| v/s Ratio Perm | | 0.36 | | | | | | 0.22 | | | | |
| v/c Ratio | | 0.76 | | | 0.63 | | | 0.55 | | | | |
| Uniform Delay, d1 | | 14.0 | | | 12.7 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.1 | | | 3.2 | | | 3.1 | | | | |
| Delay (s) | | 21.1 | | | 15.9 | | | 18.1 | | | | |
| Level of Service | | C | | | B | | | B | | | | |
| Approach Delay (s) | | 21.1 | | | 15.9 | | | 18.1 | | | 0.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.67 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 75.9% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 116 | 366 | 116 | 64 | 353 | 109 | 153 | 1707 | 128 | 65 | 445 | 93 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1923 | 1426 | | 1923 | 1396 | 1501 | 3099 | 1285 | 1425 | 2956 | 1265 |
| Flt Permitted | | 0.55 | 1.00 | | 0.62 | 1.00 | 0.38 | 1.00 | 1.00 | 0.10 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1062 | 1426 | | 1194 | 1396 | 608 | 3099 | 1285 | 145 | 2956 | 1265 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 122 | 385 | 122 | 67 | 372 | 115 | 161 | 1797 | 135 | 68 | 468 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 72 | 0 | 0 | 68 | 0 | 0 | 30 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 0 | 507 | 50 | 0 | 439 | 47 | 161 | 1797 | 105 | 68 | 468 | 39 |
| Confl. Peds. (#/hr) | 42 | | 39 | 39 | | 42 | 20 | | 8 | 8 | | 20 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 6% | 4% | 3% | 0% | 6% | 5% | 6% | 3% | 4% | 8% | 8% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 54.0 | 47.0 | 47.0 | 45.5 | 41.5 | 41.5 |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | 54.0 | 47.0 | 47.0 | 45.5 | 41.5 | 41.5 |
| Actuated g/C Ratio | | 0.41 | 0.41 | | 0.41 | 0.41 | 0.51 | 0.45 | 0.45 | 0.43 | 0.40 | 0.40 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 435 | 584 | | 489 | 572 | 393 | 1387 | 575 | 112 | 1168 | 500 |
| v/s Ratio Prot | | | | | | | 0.04 | c0.58 | | c0.02 | 0.16 | |
| v/s Ratio Perm | | c0.48 | 0.04 | | 0.37 | 0.03 | 0.17 | | 0.08 | 0.24 | | 0.03 |
| v/c Ratio | | 1.17 | 0.09 | | 0.90 | 0.08 | 0.41 | 1.30 | 0.18 | 0.61 | 0.40 | 0.08 |
| Uniform Delay, d1 | | 31.0 | 19.0 | | 28.9 | 18.9 | 14.4 | 29.0 | 17.4 | 24.7 | 22.8 | 19.8 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.50 | 0.77 | 0.42 |
| Incremental Delay, d2 | | 96.9 | 0.3 | | 21.9 | 0.3 | 0.7 | 138.5 | 0.7 | 8.7 | 1.0 | 0.3 |
| Delay (s) | | 127.9 | 19.3 | | 50.8 | 19.2 | 15.1 | 167.5 | 18.1 | 45.8 | 18.6 | 8.6 |
| Level of Service | | F | B | | D | B | B | F | B | D | B | A |
| Approach Delay (s) | | 106.8 | | | 44.3 | | | 146.1 | | | 20.0 | |
| Approach LOS | | F | | | D | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 104.9 | | | HCM Level of Service | | | F | | | | |
| HCM Volume to Capacity ratio | | 1.21 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 105.0 | | | Sum of lost time (s) | | | 11.0 | | | | |
| Intersection Capacity Utilization | | 117.4% | | | ICU Level of Service | | | H | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















Halsted Rail Alternative Mitigated (2030) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 59 | 494 | 62 | 50 | 476 | 50 | 79 | 62 | 55 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1627 | | | 1630 | | | 1779 | | | | |
| Flt Permitted | | 0.90 | | | 0.91 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1473 | | | 1489 | | | 1779 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 549 | 69 | 56 | 529 | 56 | 88 | 69 | 61 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 5 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 678 | 0 | 0 | 636 | 0 | 0 | 197 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 861 | | | 870 | | | 520 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.46 | | | 0.43 | | | 0.11 | | | | |
| v/c Ratio | | 0.79 | | | 0.73 | | | 0.38 | | | | |
| Uniform Delay, d1 | | 10.4 | | | 9.8 | | | 18.3 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 7.2 | | | 5.4 | | | 2.1 | | | | |
| Delay (s) | | 17.6 | | | 15.2 | | | 20.4 | | | | |
| Level of Service | | B | | | B | | | C | | | | |
| Approach Delay (s) | | 17.6 | | | 15.2 | | | 20.4 | | | 0.0 | |
| Approach LOS | | B | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 65.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 30 | 507 | 67 | 32 | 441 | 39 | 55 | 150 | 89 | 49 | 192 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.95 | | 1.00 | 0.98 | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1656 | 1255 | | 1636 | 1288 | | 1658 | 1490 | | 1737 | |
| Flt Permitted | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.84 | 1.00 | | 0.92 | |
| Satd. Flow (perm) | | 1595 | 1255 | | 1554 | 1288 | | 1416 | 1490 | | 1607 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 32 | 534 | 71 | 34 | 464 | 41 | 58 | 158 | 94 | 52 | 202 | 57 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 16 | 0 | 0 | 64 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 0 | 566 | 41 | 0 | 498 | 25 | 0 | 216 | 30 | 0 | 300 | 0 |
| Confl. Peds. (#/hr) | 33 | | 15 | 15 | | 33 | 68 | | 5 | 5 | | 68 |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 14% | 19% | 5% | 9% | 2% | 2% | 1% | 10% | 7% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 914 | 720 | | 891 | 738 | | 453 | 477 | | 514 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.35 | 0.03 | | 0.32 | 0.02 | | 0.15 | 0.02 | | c0.19 | |
| v/c Ratio | | 0.62 | 0.06 | | 0.56 | 0.03 | | 0.48 | 0.06 | | 0.58 | |
| Uniform Delay, d1 | | 10.6 | 7.1 | | 10.0 | 7.0 | | 20.5 | 17.7 | | 21.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.1 | 0.1 | | 2.5 | 0.1 | | 3.6 | 0.3 | | 4.8 | |
| Delay (s) | | 13.7 | 7.2 | | 12.6 | 7.0 | | 24.0 | 18.0 | | 26.1 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.0 | | | 12.2 | | | 22.2 | | | 26.1 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.6 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 95.3% | | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 84 | 438 | 30 | 17 | 317 | 39 | 55 | 303 | 38 | 38 | 92 | 11 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1464 | 2990 | | 1459 | 3534 | | 1534 | 1647 | 1301 | 1517 | 1541 | 1156 |
| Flt Permitted | 0.51 | 1.00 | | 0.43 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 |
| Satd. Flow (perm) | 788 | 2990 | | 658 | 3534 | | 1116 | 1647 | 1301 | 720 | 1541 | 1156 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 487 | 33 | 19 | 352 | 43 | 61 | 337 | 42 | 42 | 102 | 12 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 15 | 0 | 0 | 0 | 22 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 93 | 513 | 0 | 19 | 380 | 0 | 61 | 337 | 20 | 42 | 102 | 5 |
| Confl. Peds. (#/hr) | 16 | | 9 | 9 | | 16 | 1 | | 5 | 5 | | 1 |
| Heavy Vehicles (%) | 8% | 6% | 0% | 13% | 8% | 3% | 4% | 2% | 8% | 5% | 9% | 22% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 376 | 1426 | | 314 | 1685 | | 446 | 659 | 520 | 288 | 616 | 462 |
| v/s Ratio Prot | | c0.17 | | | 0.11 | | | c0.20 | | | 0.07 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | | 0.05 | | 0.02 | 0.06 | | 0.00 |
| v/c Ratio | 0.25 | 0.36 | | 0.06 | 0.23 | | 0.14 | 0.51 | 0.04 | 0.15 | 0.17 | 0.01 |
| Uniform Delay, d1 | 10.1 | 10.7 | | 9.2 | 10.0 | | 12.4 | 14.7 | 11.9 | 12.4 | 12.5 | 11.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.60 | 0.74 | 0.31 | 0.53 | 0.54 | 0.28 |
| Incremental Delay, d2 | 1.6 | 0.7 | | 0.4 | 0.3 | | 0.6 | 2.8 | 0.1 | 1.1 | 0.6 | 0.0 |
| Delay (s) | 11.6 | 11.4 | | 9.5 | 10.3 | | 8.0 | 13.6 | 3.8 | 7.7 | 7.3 | 3.4 |
| Level of Service | B | B | | A | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 11.5 | | | 10.2 | | | 11.9 | | | 7.1 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 51.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 98 | 413 | 86 | 44 | 282 | 65 | 73 | 371 | 44 | 57 | 143 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.97 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1464 | 3056 | | 1588 | 3009 | | 1541 | 3022 | | 1403 | 2767 | |
| Flt Permitted | 0.52 | 1.00 | | 0.42 | 1.00 | | 0.62 | 1.00 | | 0.46 | 1.00 | |
| Satd. Flow (perm) | 808 | 3056 | | 698 | 3009 | | 1007 | 3022 | | 678 | 2767 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 103 | 435 | 91 | 46 | 297 | 68 | 77 | 391 | 46 | 60 | 151 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 103 | 526 | 0 | 46 | 365 | 0 | 77 | 425 | 0 | 60 | 175 | 0 |
| Confl. Peds. (#/hr) | 98 | | 10 | 10 | | 98 | 28 | | 52 | 52 | | 28 |
| Heavy Vehicles (%) | 5% | 5% | 4% | 0% | 5% | 7% | 2% | 6% | 13% | 10% | 11% | 20% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 388 | 1467 | | 335 | 1444 | | 416 | 1249 | | 280 | 1144 | |
| v/s Ratio Prot | c0.17 | | | 0.12 | | | c0.14 | | | 0.06 | | |
| v/s Ratio Perm | 0.13 | | | 0.07 | | | 0.08 | | | 0.09 | | |
| v/c Ratio | 0.27 | 0.36 | | 0.14 | 0.25 | | 0.19 | 0.34 | | 0.21 | 0.15 | |
| Uniform Delay, d1 | 11.6 | 12.2 | | 10.9 | 11.5 | | 14.0 | 15.0 | | 14.2 | 13.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.7 | | 0.9 | 0.4 | | 1.0 | 0.7 | | 1.7 | 0.3 | |
| Delay (s) | 13.3 | 12.9 | | 11.7 | 12.0 | | 15.0 | 15.8 | | 15.9 | 14.1 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 13.0 | | | 11.9 | | | 15.6 | | | 14.5 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.7 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 50.0% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive

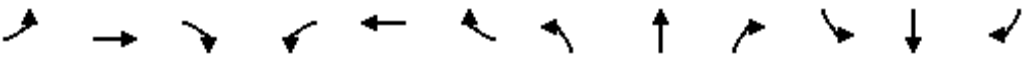
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 110 | 329 | 38 | 23 | 328 | 47 | 67 | 412 | 26 | 43 | 206 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1533 | 1576 | | 1474 | 1841 | | 1533 | 3073 | | 1372 | 2881 | |
| Flt Permitted | 0.45 | 1.00 | | 0.46 | 1.00 | | 0.58 | 1.00 | | 0.41 | 1.00 | |
| Satd. Flow (perm) | 720 | 1576 | | 713 | 1841 | | 942 | 3073 | | 597 | 2881 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 116 | 346 | 40 | 24 | 345 | 49 | 71 | 434 | 27 | 45 | 217 | 56 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 116 | 386 | 0 | 24 | 394 | 0 | 71 | 461 | 0 | 45 | 273 | 0 |
| Confl. Peds. (#/hr) | 7 | | 23 | 23 | | 7 | 10 | | 8 | 8 | | 10 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Heavy Vehicles (%) | 4% | 8% | 10% | 0% | 9% | 5% | 0% | 3% | 0% | 12% | 7% | 6% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.0 | 41.8 | | 40.6 | 38.6 | | 26.8 | 22.2 | | 23.6 | 20.6 | |
| Effective Green, g (s) | 47.0 | 39.8 | | 40.6 | 36.6 | | 26.8 | 20.2 | | 23.6 | 18.6 | |
| Actuated g/C Ratio | 0.55 | 0.47 | | 0.48 | 0.43 | | 0.32 | 0.24 | | 0.28 | 0.22 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 448 | 738 | | 358 | 793 | | 329 | 730 | | 193 | 630 | |
| v/s Ratio Prot | c0.02 | c0.24 | | 0.00 | 0.21 | | c0.01 | c0.15 | | 0.01 | 0.09 | |
| v/s Ratio Perm | 0.13 | | | 0.03 | | | 0.06 | | | 0.06 | | |
| v/c Ratio | 0.26 | 0.52 | | 0.07 | 0.50 | | 0.22 | 0.63 | | 0.23 | 0.43 | |
| Uniform Delay, d1 | 13.5 | 15.9 | | 15.0 | 17.5 | | 21.5 | 29.1 | | 26.1 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 2.6 | | 0.1 | 2.2 | | 0.3 | 4.1 | | 0.6 | 2.2 | |
| Delay (s) | 13.8 | 18.6 | | 15.1 | 19.7 | | 21.9 | 33.2 | | 26.8 | 30.8 | |
| Level of Service | B | B | | B | B | | C | C | | C | C | |
| Approach Delay (s) | | 17.5 | | | 19.5 | | | 31.7 | | | 30.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.5 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.53 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 63.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | | ↗ | ↕↕ | |
| Volume (vph) | 69 | 322 | 44 | 65 | 383 | 115 | 59 | 390 | 126 | 56 | 162 | 37 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3493 | | | 2913 | | 1614 | 3156 | | 1581 | 2921 | |
| Flt Permitted | | 0.78 | | | 0.84 | | 0.61 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 2748 | | | 2465 | | 1042 | 3156 | | 628 | 2921 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 77 | 358 | 49 | 72 | 426 | 128 | 66 | 433 | 140 | 62 | 180 | 41 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 0 | 0 | 626 | 0 | 66 | 573 | 0 | 62 | 221 | 0 |
| Confl. Peds. (#/hr) | 20 | | 16 | 16 | | 20 | 5 | | 33 | 33 | | 5 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 9% | 9% | 0% | 24% | 7% | 6% | 2% | 4% | 2% | 0% | 5% | 9% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1246 | | | 1117 | | 458 | 1389 | | 276 | 1285 | |
| v/s Ratio Prot | | | | | | | | c0.18 | | | 0.08 | |
| v/s Ratio Perm | | 0.18 | | | c0.25 | | 0.06 | | | 0.10 | | |
| v/c Ratio | | 0.39 | | | 0.56 | | 0.14 | 0.41 | | 0.22 | 0.17 | |
| Uniform Delay, d1 | | 13.6 | | | 15.0 | | 12.6 | 14.4 | | 13.0 | 12.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.9 | | | 2.0 | | 0.7 | 0.9 | | 1.9 | 0.3 | |
| Delay (s) | | 14.5 | | | 17.1 | | 13.2 | 15.3 | | 14.9 | 13.0 | |
| Level of Service | | B | | | B | | B | B | | B | B | |
| Approach Delay (s) | | 14.5 | | | 17.1 | | | 15.1 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.49 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 63.8% | | | ICU Level of Service | | | B | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 145 | 522 | 5 | 14 | 656 | 386 | 72 | 9 | 20 | 118 | 1 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.97 | | | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.97 | |
| Satd. Flow (prot) | 1574 | 3144 | | 1629 | 3257 | 1457 | | 1611 | | | 3105 | |
| Flt Permitted | 0.35 | 1.00 | | 0.42 | 1.00 | 1.00 | | 0.69 | | | 0.75 | |
| Satd. Flow (perm) | 585 | 3144 | | 721 | 3257 | 1457 | | 1158 | | | 2398 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 161 | 580 | 6 | 16 | 729 | 429 | 80 | 10 | 22 | 131 | 1 | 58 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 150 | 0 | 12 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 161 | 585 | 0 | 16 | 729 | 279 | 0 | 100 | 0 | 0 | 146 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | | 16.7 | | | 16.7 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | 0.65 | | 0.24 | | | 0.24 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 381 | 2046 | | 469 | 2119 | 948 | | 274 | | | 566 | |
| v/s Ratio Prot | 0.19 | | | 0.22 | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | 0.02 | | 0.19 | | c0.09 | | | 0.06 | |
| v/c Ratio | 0.42 | 0.29 | | 0.03 | 0.34 | 0.29 | | 0.36 | | | 0.26 | |
| Uniform Delay, d1 | 6.0 | 5.3 | | 4.4 | 5.6 | 5.3 | | 22.6 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 3.4 | 0.4 | | 0.1 | 0.4 | 0.8 | | 3.5 | | | 1.0 | |
| Delay (s) | 9.4 | 5.7 | | 4.5 | 6.0 | 6.1 | | 26.1 | | | 23.0 | |
| Level of Service | A | A | | A | A | A | | C | | | C | |
| Approach Delay (s) | 6.5 | | | 6.0 | | | | 26.1 | | | 23.0 | |
| Approach LOS | A | | | A | | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 8.6 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.41 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.7 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.2% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

1/14/2013

















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 111 | 214 | 76 | 63 | 190 | 71 | 133 | 1972 | 88 | 71 | 499 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 1498 | | 1547 | 1584 | | 1493 | 3069 | 1271 | 1452 | 2983 | 1301 |
| Flt Permitted | 0.37 | 1.00 | | 0.32 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 608 | 1498 | | 521 | 1584 | | 612 | 3069 | 1271 | 180 | 2983 | 1301 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 117 | 225 | 80 | 66 | 200 | 75 | 140 | 2076 | 93 | 75 | 525 | 43 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 18 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 117 | 290 | 0 | 66 | 259 | 0 | 140 | 2076 | 75 | 75 | 525 | 18 |
| Confl. Peds. (#/hr) | 4 | | 9 | 9 | | 4 | 6 | | 16 | 16 | | 6 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 4% | 3% | 1% | 2% | 3% | 4% | 4% | 6% | 7% | 3% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 252 | 388 | | 232 | 410 | | 350 | 1264 | 523 | 174 | 1228 | 536 |
| v/s Ratio Prot | c0.03 | c0.19 | | 0.02 | 0.16 | | 0.03 | c0.68 | | c0.03 | 0.18 | |
| v/s Ratio Perm | 0.11 | | | 0.07 | | | 0.16 | | 0.06 | 0.17 | | 0.01 |
| v/c Ratio | 0.46 | 0.75 | | 0.28 | 0.63 | | 0.40 | 1.64 | 0.14 | 0.43 | 0.43 | 0.03 |
| Uniform Delay, d1 | 22.5 | 29.0 | | 21.9 | 27.9 | | 13.3 | 25.0 | 15.6 | 18.1 | 17.8 | 14.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.62 | 0.71 | 0.50 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 12.4 | | 3.1 | 7.2 | | 2.7 | 292.0 | 0.5 | 7.6 | 1.1 | 0.1 |
| Delay (s) | 28.6 | 41.4 | | 24.9 | 35.2 | | 11.0 | 309.8 | 8.2 | 25.7 | 18.9 | 15.0 |
| Level of Service | C | D | | C | D | | B | F | A | C | B | B |
| Approach Delay (s) | | 37.8 | | | 33.2 | | | 279.5 | | | 19.5 | |
| Approach LOS | | D | | | C | | | F | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 184.4 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 1.15 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 96.8% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 26 | 218 | 24 | 15 | 149 | 18 | 21 | 166 | 27 | 33 | 148 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1843 | | | 1836 | | | 1900 | | | 1931 | |
| Flt Permitted | | 0.96 | | | 0.97 | | | 0.97 | | | 0.94 | |
| Satd. Flow (perm) | | 1787 | | | 1790 | | | 1844 | | | 1822 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 27 | 225 | 25 | 15 | 154 | 19 | 22 | 171 | 28 | 34 | 153 | 22 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 272 | 0 | 0 | 182 | 0 | 0 | 213 | 0 | 0 | 203 | 0 |
| Confl. Peds. (#/hr) | 5 | | 11 | 11 | | 5 | 7 | | 34 | 34 | | 7 |
| Confl. Bikes (#/hr) | | | 3 | 3 | | | | | | | | |
| Heavy Vehicles (%) | 4% | 2% | 0% | 20% | 1% | 0% | 12% | 3% | 8% | 0% | 3% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 742 | | | 744 | | | 851 | | | 841 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.10 | | | c0.12 | | | 0.11 | |
| v/c Ratio | | 0.37 | | | 0.24 | | | 0.25 | | | 0.24 | |
| Uniform Delay, d1 | | 13.1 | | | 12.4 | | | 10.7 | | | 10.6 | |
| Progression Factor | | 1.00 | | | 0.64 | | | 1.08 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 0.8 | | | 0.7 | | | 0.7 | |
| Delay (s) | | 14.5 | | | 8.6 | | | 12.2 | | | 11.3 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.5 | | | 8.6 | | | 12.2 | | | 11.3 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.9 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.31 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 45.8% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 181 | 34 | 9 | 162 | 19 | 44 | 384 | 33 | 16 | 86 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.95 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1465 | 2994 | | 1302 | 3037 | | 1529 | 3093 | | 1492 | 2868 | |
| Flt Permitted | 0.63 | 1.00 | | 0.60 | 1.00 | | 0.68 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 965 | 2994 | | 827 | 3037 | | 1093 | 3093 | | 757 | 2868 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 201 | 38 | 10 | 180 | 21 | 49 | 427 | 37 | 18 | 96 | 19 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 13 | 0 | 0 | 10 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 27 | 215 | 0 | 10 | 188 | 0 | 49 | 454 | 0 | 18 | 107 | 0 |
| Confl. Peds. (#/hr) | 35 | | 6 | 6 | | 35 | 18 | | | | | 18 |
| Confl. Bikes (#/hr) | 14 | | 32 | 32 | | 14 | 23 | | 7 | 7 | | 23 |
| Heavy Vehicles (%) | 4% | 4% | 0% | 22% | 2% | 6% | 3% | 2% | 0% | 7% | 8% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 875 | | 242 | 888 | | 639 | 1808 | | 443 | 1677 | |
| v/s Ratio Prot | c0.07 | | | 0.06 | | | c0.15 | | | 0.04 | | |
| v/s Ratio Perm | 0.03 | | | 0.01 | | | 0.04 | | | 0.02 | | |
| v/c Ratio | 0.10 | 0.25 | | 0.04 | 0.21 | | 0.08 | 0.25 | | 0.04 | 0.06 | |
| Uniform Delay, d1 | 16.7 | 17.5 | | 16.5 | 17.3 | | 5.9 | 6.6 | | 5.7 | 5.8 | |
| Progression Factor | 0.73 | 0.73 | | 0.76 | 0.74 | | 0.93 | 0.96 | | 0.49 | 0.44 | |
| Incremental Delay, d2 | 0.6 | 0.6 | | 0.3 | 0.5 | | 0.2 | 0.3 | | 0.2 | 0.1 | |
| Delay (s) | 12.9 | 13.5 | | 12.8 | 13.4 | | 5.7 | 6.6 | | 3.0 | 2.6 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 13.5 | | | 13.3 | | | 6.5 | | | 2.7 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.0 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.25 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 40.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 46 | 178 | 34 | 16 | 122 | 38 | 28 | 414 | 24 | 14 | 163 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1556 | 2952 | | 1515 | 2868 | | | 1878 | | | 1808 | |
| Flt Permitted | 0.64 | 1.00 | | 0.60 | 1.00 | | | 0.98 | | | 0.96 | |
| Satd. Flow (perm) | 1047 | 2952 | | 965 | 2868 | | | 1838 | | | 1739 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 51 | 198 | 38 | 18 | 136 | 42 | 31 | 460 | 27 | 16 | 181 | 17 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 51 | 213 | 0 | 18 | 153 | 0 | 0 | 515 | 0 | 0 | 209 | 0 |
| Confl. Peds. (#/hr) | 10 | | 29 | 29 | | 10 | 17 | | 10 | 10 | | 17 |
| Confl. Bikes (#/hr) | | | | | | | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 4% | 10% | 0% | 4% | 0% | 0% | 8% | 4% | 0% | 13% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 419 | 1181 | | 386 | 1147 | | | 877 | | | 829 | |
| v/s Ratio Prot | c0.07 | | | 0.05 | | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | c0.28 | | | 0.12 | |
| v/c Ratio | 0.12 | 0.18 | | 0.05 | 0.13 | | | 0.59 | | | 0.25 | |
| Uniform Delay, d1 | 12.3 | 12.6 | | 11.9 | 12.4 | | | 12.4 | | | 10.1 | |
| Progression Factor | 1.01 | 0.92 | | 0.86 | 0.88 | | | 1.02 | | | 1.00 | |
| Incremental Delay, d2 | 0.6 | 0.3 | | 0.2 | 0.2 | | | 2.8 | | | 0.7 | |
| Delay (s) | 13.1 | 12.0 | | 10.5 | 11.1 | | | 15.4 | | | 10.8 | |
| Level of Service | B | B | | B | B | | | B | | | B | |
| Approach Delay (s) | 12.2 | | | 11.0 | | | 15.4 | | | 10.8 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.1 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.40 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 59.3% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 90 | 127 | 60 | 2 | 84 | 36 | 21 | 275 | 9 | 7 | 184 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1605 | 1879 | | 1587 | 1870 | | | 1971 | | | 1933 | |
| Flt Permitted | 0.67 | 1.00 | | 0.57 | 1.00 | | | 0.98 | | | 0.99 | |
| Satd. Flow (perm) | 1135 | 1879 | | 950 | 1870 | | | 1928 | | | 1916 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 100 | 141 | 67 | 2 | 93 | 40 | 23 | 306 | 10 | 8 | 204 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 100 | 208 | 0 | 2 | 133 | 0 | 0 | 339 | 0 | 0 | 244 | 0 |
| Confl. Peds. (#/hr) | | | 8 | 8 | | | 1 | | 8 | 8 | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 6% | 0% | 0% | 3% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 349 | 578 | | 292 | 575 | | | 1097 | | | 1091 | |
| v/s Ratio Prot | c0.11 | | | 0.07 | | | | | | | | |
| v/s Ratio Perm | 0.09 | | | 0.00 | | | | c0.18 | | | 0.13 | |
| v/c Ratio | 0.29 | 0.36 | | 0.01 | 0.23 | | | 0.31 | | | 0.22 | |
| Uniform Delay, d1 | 17.1 | 17.5 | | 15.6 | 16.8 | | | 7.3 | | | 6.9 | |
| Progression Factor | 0.90 | 0.89 | | 0.89 | 0.92 | | | 0.94 | | | 1.00 | |
| Incremental Delay, d2 | 2.0 | 1.7 | | 0.0 | 0.9 | | | 0.7 | | | 0.5 | |
| Delay (s) | 17.5 | 17.4 | | 14.0 | 16.3 | | | 7.6 | | | 7.4 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | 17.4 | | | 16.3 | | | 7.6 | | | 7.4 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.33 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 45.6% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 122 | 9 | 55 | 1 | 3 | 12 | 40 | 492 | 6 | 2 | 201 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1603 | 1672 | | 1710 | 1422 | | 1491 | 1631 | 1392 | 1649 | 1907 | 1427 |
| Flt Permitted | 0.75 | 1.00 | | 0.71 | 1.00 | | 0.62 | 1.00 | 1.00 | 0.37 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1260 | 1672 | | 1279 | 1422 | | 971 | 1631 | 1392 | 648 | 1907 | 1427 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 136 | 10 | 61 | 1 | 3 | 13 | 44 | 547 | 7 | 2 | 223 | 56 |
| RTOR Reduction (vph) | 0 | 44 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 136 | 27 | 0 | 1 | 7 | 0 | 44 | 547 | 4 | 2 | 223 | 34 |
| Confl. Peds. (#/hr) | 9 | | | | | 9 | 1 | | 6 | 6 | | 1 |
| Heavy Vehicles (%) | 5% | 14% | 5% | 0% | 67% | 12% | 7% | 3% | 0% | 0% | 7% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 349 | 463 | | 354 | 394 | | 583 | 979 | 835 | 389 | 1144 | 856 |
| v/s Ratio Prot | | 0.02 | | | 0.00 | | | c0.34 | | | 0.12 | |
| v/s Ratio Perm | c0.11 | | | 0.00 | | | 0.05 | | 0.00 | 0.00 | | 0.02 |
| v/c Ratio | 0.39 | 0.06 | | 0.00 | 0.02 | | 0.08 | 0.56 | 0.01 | 0.01 | 0.19 | 0.04 |
| Uniform Delay, d1 | 19.0 | 17.3 | | 17.0 | 17.1 | | 5.4 | 7.8 | 5.2 | 5.2 | 5.9 | 5.3 |
| Progression Factor | 1.47 | 2.41 | | 1.00 | 1.00 | | 1.17 | 1.10 | 1.32 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.2 | | 0.0 | 0.1 | | 0.2 | 1.7 | 0.0 | 0.0 | 0.4 | 0.1 |
| Delay (s) | 31.1 | 41.9 | | 17.0 | 17.1 | | 6.5 | 10.3 | 6.9 | 5.2 | 6.3 | 5.4 |
| Level of Service | C | D | | B | B | | A | B | A | A | A | A |
| Approach Delay (s) | | 34.8 | | | 17.1 | | | 10.0 | | | 6.1 | |
| Approach LOS | | C | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.5% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|------|----------------------|------|------|------|--------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 249 | 76 | 129 | 378 | 0 | 0 | 0 | 0 | 80 | 305 | 361 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.92 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2829 | | 1621 | 3288 | | | | | 1574 | 2907 | |
| Flt Permitted | | 1.00 | | 0.49 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2829 | | 835 | 3288 | | | | | 1574 | 2907 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 262 | 80 | 136 | 398 | 0 | 0 | 0 | 0 | 84 | 321 | 380 |
| RTOR Reduction (vph) | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 | 0 |
| Lane Group Flow (vph) | 0 | 313 | 0 | 136 | 398 | 0 | 0 | 0 | 0 | 84 | 487 | 0 |
| Confl. Peds. (#/hr) | 14 | | 32 | 32 | | 14 | 14 | | | | | 14 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 9% | 4% | 5% | 4% | 0% | 0% | 0% | 0% | 5% | 2% | 4% |
| Turn Type | | | D.P+P | | | | | | | custom | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 33.0 | | 56.0 | 59.0 | | | | | 32.0 | 32.0 | |
| Actuated g/C Ratio | | 0.33 | | 0.56 | 0.59 | | | | | 0.32 | 0.32 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | 648 | 1940 | | | | | 504 | 930 | |
| v/s Ratio Prot | | c0.11 | | c0.05 | 0.12 | | | | | 0.05 | c0.17 | |
| v/s Ratio Perm | | | | 0.07 | | | | | | | | |
| v/c Ratio | | 0.34 | | 0.21 | 0.21 | | | | | 0.17 | 0.52 | |
| Uniform Delay, d1 | | 25.2 | | 10.6 | 9.6 | | | | | 24.4 | 27.8 | |
| Progression Factor | | 1.00 | | 1.97 | 2.07 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | 0.6 | 0.2 | | | | | 0.7 | 2.1 | |
| Delay (s) | | 26.2 | | 21.5 | 19.9 | | | | | 25.1 | 29.9 | |
| Level of Service | | C | | C | B | | | | | C | C | |
| Approach Delay (s) | | 26.2 | | | 20.4 | | | 0.0 | | | 29.4 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.8 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 129 | 200 | 0 | 0 | 333 | 70 | 174 | 554 | 347 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1673 | 3054 | | | 2833 | | 1750 | 1782 | 1514 | | | |
| Flt Permitted | 0.33 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 583 | 3054 | | | 2833 | | 1750 | 1782 | 1514 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 136 | 211 | 0 | 0 | 351 | 74 | 183 | 583 | 365 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 245 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 211 | 0 | 0 | 408 | 0 | 183 | 583 | 120 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 14 | | 16 | 16 | | 14 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 12% | 0% | 0% | 5% | 4% | 1% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Effective Green, g (s) | 54.0 | 58.0 | | | 21.0 | | 33.0 | 33.0 | 33.0 | | | |
| Actuated g/C Ratio | 0.54 | 0.58 | | | 0.21 | | 0.33 | 0.33 | 0.33 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 675 | 1771 | | | 595 | | 578 | 588 | 500 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.14 | | 0.10 | c0.33 | | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | 0.08 | | | |
| v/c Ratio | 0.20 | 0.12 | | | 0.69 | | 0.32 | 0.99 | 0.24 | | | |
| Uniform Delay, d1 | 11.8 | 9.5 | | | 36.4 | | 25.1 | 33.4 | 24.4 | | | |
| Progression Factor | 0.24 | 0.25 | | | 1.00 | | 0.76 | 0.79 | 1.91 | | | |
| Incremental Delay, d2 | 0.6 | 0.1 | | | 6.3 | | 0.9 | 27.9 | 0.7 | | | |
| Delay (s) | 3.5 | 2.5 | | | 42.7 | | 19.9 | 54.1 | 47.3 | | | |
| Level of Service | A | A | | | D | | B | D | D | | | |
| Approach Delay (s) | | 2.9 | | | 42.7 | | | 46.4 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.6 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 62.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | |  |  | | | | |  |  |  |
| Volume (vph) | 0 | 476 | 372 | 34 | 592 | 0 | 0 | 0 | 0 | 5 | 216 | 200 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3112 | | 1613 | 3273 | | | | | 1596 | 3160 | 1443 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3112 | | 268 | 3273 | | | | | 1596 | 3160 | 1443 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 496 | 388 | 35 | 617 | 0 | 0 | 0 | 0 | 5 | 225 | 208 |
| RTOR Reduction (vph) | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137 |
| Lane Group Flow (vph) | 0 | 743 | 0 | 35 | 617 | 0 | 0 | 0 | 0 | 5 | 225 | 71 |
| Confl. Peds. (#/hr) | 22 | | 3 | 3 | | 22 | | | | | | |
| Confl. Bikes (#/hr) | 4 | | | | | 4 | | | 32 | 32 | | |
| Heavy Vehicles (%) | 0% | 2% | 2% | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 6% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1120 | | 387 | 1898 | | | | | 543 | 1074 | 491 |
| v/s Ratio Prot | | c0.24 | | 0.02 | c0.19 | | | | | 0.00 | c0.07 | 0.05 |
| v/s Ratio Perm | | | | 0.03 | | | | | | | | |
| v/c Ratio | | 0.66 | | 0.09 | 0.33 | | | | | 0.01 | 0.21 | 0.14 |
| Uniform Delay, d1 | | 26.9 | | 12.6 | 10.9 | | | | | 21.8 | 23.5 | 22.9 |
| Progression Factor | | 1.00 | | 0.54 | 0.68 | | | | | 0.73 | 0.78 | 0.90 |
| Incremental Delay, d2 | | 3.1 | | 0.2 | 0.2 | | | | | 0.0 | 0.4 | 0.6 |
| Delay (s) | | 30.0 | | 7.0 | 7.6 | | | | | 16.0 | 18.7 | 21.3 |
| Level of Service | | C | | A | A | | | | | B | B | C |
| Approach Delay (s) | | 30.0 | | | 7.5 | | | 0.0 | | | 19.9 | |
| Approach LOS | | C | | | A | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 20.3 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.3% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 420 | 60 | 0 | 0 | 57 | 6 | 569 | 647 | 62 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 0.99 | 0.99 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.96 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1444 | 3040 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Flt Permitted | 0.71 | 0.74 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 1083 | 2333 | | | 3070 | | 1555 | 1637 | 1500 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 433 | 62 | 0 | 0 | 59 | 6 | 587 | 667 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 216 | 279 | 0 | 0 | 60 | 0 | 587 | 667 | 26 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 30 | | 2 | 2 | | 30 | | | 4 | 4 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 3% | 2% | 0% | 0% | 2% | 0% | 1% | 1% | 2% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 682 | 1444 | | | 461 | | 575 | 606 | 555 | | | |
| v/s Ratio Prot | c0.11 | 0.07 | | | 0.02 | | 0.38 | c0.41 | 0.02 | | | |
| v/s Ratio Perm | c0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.19 | | | 0.13 | | 1.02 | 1.10 | 0.05 | | | |
| Uniform Delay, d1 | 14.1 | 13.3 | | | 36.8 | | 31.5 | 31.5 | 20.2 | | | |
| Progression Factor | 0.22 | 0.24 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.9 | 0.2 | | | 0.6 | | 42.9 | 67.2 | 0.2 | | | |
| Delay (s) | 4.0 | 3.4 | | | 37.4 | | 74.4 | 98.7 | 20.4 | | | |
| Level of Service | A | A | | | D | | E | F | C | | | |
| Approach Delay (s) | | 3.6 | | | 37.4 | | | 84.1 | | | 0.0 | |
| Approach LOS | | A | | | D | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 61.3 | | | | HCM Level of Service | | E | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | | Sum of lost time (s) | | 12.0 | | | |
| Intersection Capacity Utilization | | | 89.3% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|------|-------|----------------------|-------|-------|------|-------|------|------|
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 163 | 285 | 73 | 58 | 281 | 114 | 51 | 1151 | 62 | 88 | 476 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.98 | | | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2843 | | | 2815 | | 1447 | 3069 | 1336 | 1494 | 2956 | 1270 |
| Flt Permitted | | 0.62 | | | 0.82 | | 0.39 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1801 | | | 2328 | | 600 | 3069 | 1336 | 197 | 2956 | 1270 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 297 | 76 | 60 | 293 | 119 | 53 | 1199 | 65 | 92 | 496 | 44 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 39 | 0 | 0 | 0 | 24 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 0 | 527 | 0 | 0 | 433 | 0 | 53 | 1199 | 41 | 92 | 496 | 17 |
| Confl. Peds. (#/hr) | 49 | | 20 | 20 | | 49 | 26 | | 8 | 8 | | 26 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | | | | | | |
| Heavy Vehicles (%) | 10% | 7% | 4% | 9% | 7% | 5% | 6% | 4% | 0% | 3% | 8% | 5% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 836 | | | 767 | | 294 | 1210 | 519 | 144 | 1165 | 493 |
| v/s Ratio Prot | | c0.04 | | | | | 0.01 | c0.39 | | c0.03 | 0.17 | |
| v/s Ratio Perm | | 0.22 | | | c0.19 | | 0.07 | | 0.03 | 0.24 | | 0.01 |
| v/c Ratio | | 0.63 | | | 0.56 | | 0.18 | 0.99 | 0.08 | 0.64 | 0.43 | 0.03 |
| Uniform Delay, d1 | | 19.3 | | | 23.5 | | 14.8 | 25.6 | 16.4 | 19.0 | 18.7 | 16.1 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.34 | 0.87 | 1.43 | 1.82 | 1.64 | 3.14 |
| Incremental Delay, d2 | | 3.6 | | | 3.0 | | 0.8 | 17.5 | 0.2 | 18.1 | 1.0 | 0.1 |
| Delay (s) | | 22.9 | | | 26.5 | | 20.6 | 39.8 | 23.6 | 52.5 | 31.8 | 50.8 |
| Level of Service | | C | | | C | | C | D | C | D | C | D |
| Approach Delay (s) | | 22.9 | | | 26.5 | | | 38.2 | | | 36.1 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 33.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 82.9% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 44 | 420 | 0 | 0 | 422 | 81 | 31 | 63 | 98 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.98 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1706 | | | 1677 | | | 1583 | | | | |
| Flt Permitted | | 0.92 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1577 | | | 1677 | | | 1583 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 49 | 467 | 0 | 0 | 469 | 90 | 34 | 70 | 109 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 58 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 516 | 0 | 0 | 549 | 0 | 0 | 155 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 23.0 | | | | |
| Actuated g/C Ratio | | 0.52 | | | 0.52 | | | 0.35 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 825 | | | 877 | | | 560 | | | | |
| v/s Ratio Prot | | | | | 0.33 | | | | | | | |
| v/s Ratio Perm | | 0.33 | | | | | | 0.10 | | | | |
| v/c Ratio | | 0.63 | | | 0.63 | | | 0.28 | | | | |
| Uniform Delay, d1 | | 11.0 | | | 11.0 | | | 15.0 | | | | |
| Progression Factor | | 1.00 | | | 0.63 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.6 | | | 2.8 | | | 1.2 | | | | |
| Delay (s) | | 14.6 | | | 9.7 | | | 16.3 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 14.6 | | | 9.7 | | | 16.3 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.7 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 76.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 48 | 415 | 33 | 20 | 416 | 49 | 25 | 175 | 35 | 51 | 107 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1886 | | | 1842 | | | 3185 | | | 3126 | |
| Flt Permitted | | 0.92 | | | 0.97 | | | 0.92 | | | 0.83 | |
| Satd. Flow (perm) | | 1753 | | | 1794 | | | 2930 | | | 2630 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 461 | 37 | 22 | 462 | 54 | 28 | 194 | 39 | 57 | 119 | 31 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 22 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 0 | 547 | 0 | 0 | 532 | 0 | 0 | 239 | 0 | 0 | 189 | 0 |
| Confl. Peds. (#/hr) | 29 | | 16 | 16 | | 29 | 28 | | 14 | 14 | | 28 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 7% | 4% | 12% | 8% | 13% | 0% | 4% | 4% | 4% | 4% | 6% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 809 | | | 828 | | | 1217 | | | 1092 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | | | 0.30 | | | c0.08 | | | 0.07 | |
| v/c Ratio | | 0.68 | | | 0.64 | | | 0.20 | | | 0.17 | |
| Uniform Delay, d1 | | 13.7 | | | 13.4 | | | 12.1 | | | 12.0 | |
| Progression Factor | | 0.63 | | | 0.56 | | | 0.98 | | | 0.61 | |
| Incremental Delay, d2 | | 3.7 | | | 3.7 | | | 0.4 | | | 0.3 | |
| Delay (s) | | 12.4 | | | 11.1 | | | 12.2 | | | 7.6 | |
| Level of Service | | B | | | B | | | B | | | A | |
| Approach Delay (s) | | 12.4 | | | 11.1 | | | 12.2 | | | 7.6 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.3 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 82.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 52 | 279 | 22 | 28 | 338 | 61 | 55 | 319 | 89 | 48 | 96 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1503 | 2936 | | 1584 | 2944 | | 1497 | 3034 | | 1594 | 2899 | |
| Flt Permitted | 0.44 | 1.00 | | 0.53 | 1.00 | | 0.66 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 697 | 2936 | | 890 | 2944 | | 1046 | 3034 | | 809 | 2899 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 58 | 310 | 24 | 31 | 376 | 68 | 61 | 354 | 99 | 53 | 107 | 32 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 22 | 0 | 0 | 39 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 58 | 325 | 0 | 31 | 422 | 0 | 61 | 414 | 0 | 53 | 124 | 0 |
| Confl. Peds. (#/hr) | 25 | | 14 | 14 | | 25 | 12 | | 4 | 4 | | 12 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 5% | 7% | 12% | 0% | 6% | 2% | 6% | 1% | 3% | 0% | 4% | 12% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 236 | 994 | | 301 | 996 | | 563 | 1634 | | 436 | 1561 | |
| v/s Ratio Prot | | 0.11 | | | c0.14 | | | c0.14 | | | 0.04 | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | 0.06 | | | 0.07 | | |
| v/c Ratio | 0.25 | 0.33 | | 0.10 | 0.42 | | 0.11 | 0.25 | | 0.12 | 0.08 | |
| Uniform Delay, d1 | 15.5 | 16.0 | | 14.7 | 16.6 | | 7.4 | 8.0 | | 7.4 | 7.2 | |
| Progression Factor | 0.57 | 0.55 | | 0.78 | 0.80 | | 0.63 | 0.63 | | 1.30 | 1.35 | |
| Incremental Delay, d2 | 2.0 | 0.7 | | 0.7 | 1.3 | | 0.4 | 0.4 | | 0.6 | 0.1 | |
| Delay (s) | 10.9 | 9.6 | | 12.1 | 14.6 | | 5.0 | 5.4 | | 10.2 | 9.8 | |
| Level of Service | B | A | | B | B | | A | A | | B | A | |
| Approach Delay (s) | | 9.8 | | | 14.4 | | | 5.3 | | | 9.9 | |
| Approach LOS | | A | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.7 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.32 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 46.7% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 391 | 28 | 37 | 362 | 82 | 20 | 308 | 44 | 41 | 118 | 41 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 0.98 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1385 | 3013 | | 1335 | 3538 | | | 3438 | | | 3303 | |
| Flt Permitted | 0.46 | 1.00 | | 0.48 | 1.00 | | | 0.94 | | | 0.84 | |
| Satd. Flow (perm) | 674 | 3013 | | 674 | 3538 | | | 3226 | | | 2808 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 88 | 412 | 29 | 39 | 381 | 86 | 21 | 324 | 46 | 43 | 124 | 43 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 30 | 0 | 0 | 16 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 88 | 433 | 0 | 39 | 437 | 0 | 0 | 375 | 0 | 0 | 184 | 0 |
| Confl. Peds. (#/hr) | 53 | | 34 | 34 | | 53 | 67 | | 28 | 28 | | 67 |
| Heavy Vehicles (%) | 8% | 5% | 0% | 14% | 6% | 1% | 0% | 9% | 20% | 5% | 15% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 321 | 1437 | | 321 | 1687 | | | 1290 | | | 1123 | |
| v/s Ratio Prot | | c0.14 | | | 0.12 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.06 | | | | c0.12 | | | 0.07 | |
| v/c Ratio | 0.27 | 0.30 | | 0.12 | 0.26 | | | 0.29 | | | 0.16 | |
| Uniform Delay, d1 | 10.2 | 10.4 | | 9.4 | 10.1 | | | 13.2 | | | 12.5 | |
| Progression Factor | 1.60 | 1.65 | | 0.79 | 0.78 | | | 0.46 | | | 0.64 | |
| Incremental Delay, d2 | 2.1 | 0.5 | | 0.7 | 0.3 | | | 0.6 | | | 0.3 | |
| Delay (s) | 18.4 | 17.6 | | 8.2 | 8.2 | | | 6.7 | | | 8.3 | |
| Level of Service | B | B | | A | A | | | A | | | A | |
| Approach Delay (s) | | 17.7 | | | 8.2 | | | 6.7 | | | 8.3 | |
| Approach LOS | | B | | | A | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.0% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 99 | 301 | 100 | 104 | 348 | 104 | 88 | 84 | 88 | 88 | 84 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.95 | | | 0.96 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1637 | 1409 | | 3032 | | | 1823 | | | 1826 | |
| Flt Permitted | | 0.74 | 1.00 | | 0.76 | | | 0.79 | | | 0.78 | |
| Satd. Flow (perm) | | 1230 | 1409 | | 2324 | | | 1456 | | | 1442 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 110 | 334 | 111 | 116 | 387 | 116 | 98 | 93 | 98 | 98 | 93 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 31 | 0 | 0 | 28 | 0 | 0 | 26 | 0 |
| Lane Group Flow (vph) | 0 | 444 | 58 | 0 | 588 | 0 | 0 | 261 | 0 | 0 | 256 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 643 | 737 | | 1216 | | | 470 | | | 466 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.36 | 0.04 | | 0.25 | | | c0.18 | | | 0.18 | |
| v/c Ratio | | 0.69 | 0.08 | | 0.48 | | | 0.55 | | | 0.55 | |
| Uniform Delay, d1 | | 11.6 | 7.7 | | 9.9 | | | 18.1 | | | 18.1 | |
| Progression Factor | | 2.01 | 5.68 | | 0.42 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 5.9 | 0.2 | | 1.3 | | | 4.7 | | | 4.6 | |
| Delay (s) | | 29.1 | 44.0 | | 5.5 | | | 22.8 | | | 22.7 | |
| Level of Service | | C | D | | A | | | C | | | C | |
| Approach Delay (s) | | 32.1 | | | 5.5 | | | 22.8 | | | 22.7 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 72.0% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 74 | 382 | 21 | 15 | 433 | 63 | 37 | 103 | 41 | 43 | 90 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1475 | 3018 | | 1573 | 3001 | | | 3454 | | | 3403 | |
| Flt Permitted | 0.40 | 1.00 | | 0.47 | 1.00 | | | 0.87 | | | 0.88 | |
| Satd. Flow (perm) | 616 | 3018 | | 771 | 3001 | | | 3030 | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 82 | 424 | 23 | 17 | 481 | 70 | 41 | 114 | 46 | 48 | 100 | 109 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 18 | 0 | 0 | 25 | 0 | 0 | 60 | 0 |
| Lane Group Flow (vph) | 82 | 441 | 0 | 17 | 533 | 0 | 0 | 176 | 0 | 0 | 197 | 0 |
| Confl. Peds. (#/hr) | 22 | | 40 | 40 | | 22 | 18 | | 3 | 3 | | 18 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 7% | 5% | 0% | 0% | 4% | 2% | 0% | 3% | 22% | 0% | 3% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Effective Green, g (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | | 29.0 | | | 29.0 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | | 0.45 | | | 0.45 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 265 | 1300 | | 332 | 1293 | | | 1352 | | | 1345 | |
| v/s Ratio Prot | | 0.15 | | | c0.18 | | | | | | | |
| v/s Ratio Perm | 0.13 | | | 0.02 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.31 | 0.34 | | 0.05 | 0.41 | | | 0.13 | | | 0.15 | |
| Uniform Delay, d1 | 12.2 | 12.3 | | 10.8 | 12.8 | | | 10.6 | | | 10.7 | |
| Progression Factor | 0.98 | 1.00 | | 1.14 | 0.99 | | | 0.99 | | | 0.80 | |
| Incremental Delay, d2 | 2.3 | 0.5 | | 0.1 | 0.5 | | | 0.2 | | | 0.2 | |
| Delay (s) | 14.1 | 12.9 | | 12.4 | 13.1 | | | 10.7 | | | 8.8 | |
| Level of Service | B | B | | B | B | | | B | | | A | |
| Approach Delay (s) | | 13.1 | | | 13.1 | | | 10.7 | | | 8.8 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.28 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 59.3% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 86 | 454 | 73 | 94 | 455 | 284 | 48 | 332 | 92 | 222 | 159 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.98 | | | 0.95 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | 0.98 | |
| Satd. Flow (prot) | | 3177 | | | 3073 | | | 3146 | | | 3118 | |
| Flt Permitted | | 0.63 | | | 0.74 | | | 0.88 | | | 0.63 | |
| Satd. Flow (perm) | | 2028 | | | 2280 | | | 2771 | | | 2008 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 504 | 81 | 104 | 506 | 316 | 53 | 369 | 102 | 247 | 177 | 58 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 103 | 0 | 0 | 33 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 0 | 665 | 0 | 0 | 823 | 0 | 0 | 491 | 0 | 0 | 465 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Effective Green, g (s) | | 26.0 | | | 26.0 | | | 29.0 | | | 20.0 | |
| Actuated g/C Ratio | | 0.40 | | | 0.40 | | | 0.45 | | | 0.31 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 811 | | | 912 | | | 1271 | | | 618 | |
| v/s Ratio Prot | | | | | | | | c0.04 | | | | |
| v/s Ratio Perm | | 0.33 | | | c0.36 | | | 0.14 | | | c0.23 | |
| v/c Ratio | | 0.82 | | | 0.90 | | | 0.39 | | | 0.96dl | |
| Uniform Delay, d1 | | 17.4 | | | 18.3 | | | 12.0 | | | 20.3 | |
| Progression Factor | | 1.73 | | | 1.00 | | | 1.00 | | | 0.89 | |
| Incremental Delay, d2 | | 8.9 | | | 13.9 | | | 0.9 | | | 8.3 | |
| Delay (s) | | 39.1 | | | 32.2 | | | 12.9 | | | 26.3 | |
| Level of Service | | D | | | C | | | B | | | C | |
| Approach Delay (s) | | 39.1 | | | 32.2 | | | 12.9 | | | 26.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | |
| Intersection Capacity Utilization | | | 88.2% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 723 | 118 | 45 | 755 | 0 | 134 | 0 | 70 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 2976 | | | 3031 | | | 1583 | | | | |
| Flt Permitted | | 1.00 | | | 0.84 | | | 0.80 | | | | |
| Satd. Flow (perm) | | 2976 | | | 2543 | | | 1311 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 803 | 131 | 50 | 839 | 0 | 149 | 0 | 78 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 916 | 0 | 0 | 889 | 0 | 0 | 206 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1918 | | | 932 | | | 233 | | | | | |
| v/s Ratio Prot | c0.31 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.35 | | | c0.16 | | | | | |
| v/c Ratio | 0.48 | | | 0.95 | | | 0.89 | | | | | |
| Uniform Delay, d1 | 8.2 | | | 27.8 | | | 36.1 | | | | | |
| Progression Factor | 0.04 | | | 1.57 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.4 | | | 18.2 | | | 35.5 | | | | | |
| Delay (s) | 0.7 | | | 61.8 | | | 71.6 | | | | | |
| Level of Service | A | | | E | | | E | | | | | |
| Approach Delay (s) | 0.7 | | | 61.8 | | | 71.6 | | | 0.0 | | |
| Approach LOS | A | | | E | | | E | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.1 | | | HCM Level of Service | | | D | | | | | |
| HCM Volume to Capacity ratio | 0.81 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 73.3% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 123 | 502 | 187 | 274 | 646 | 183 | 101 | 20 | 185 | 78 | 7 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1520 | 3020 | | 1629 | 3257 | 1457 | | 1755 | | 1629 | 1714 | 1457 |
| Flt Permitted | 0.32 | 1.00 | | 0.20 | 1.00 | 1.00 | | 0.89 | | 0.40 | 1.00 | 1.00 |
| Satd. Flow (perm) | 511 | 3020 | | 342 | 3257 | 1457 | | 1582 | | 685 | 1714 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 137 | 558 | 208 | 304 | 718 | 203 | 112 | 22 | 206 | 87 | 8 | 83 |
| RTOR Reduction (vph) | 0 | 42 | 0 | 0 | 0 | 104 | 0 | 75 | 0 | 0 | 0 | 45 |
| Lane Group Flow (vph) | 137 | 724 | 0 | 304 | 718 | 99 | 0 | 265 | 0 | 87 | 8 | 38 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Effective Green, g (s) | 40.1 | 30.7 | | 47.8 | 35.4 | 44.0 | | 20.6 | | 32.2 | 32.2 | 41.6 |
| Actuated g/C Ratio | 0.45 | 0.34 | | 0.53 | 0.39 | 0.49 | | 0.23 | | 0.36 | 0.36 | 0.46 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 333 | 1030 | | 383 | 1281 | 712 | | 362 | | 335 | 613 | 673 |
| v/s Ratio Prot | 0.04 | 0.24 | | c0.12 | 0.22 | 0.01 | | | | c0.02 | 0.00 | 0.01 |
| v/s Ratio Perm | 0.14 | | | c0.30 | | 0.05 | | c0.17 | | 0.07 | | 0.02 |
| v/c Ratio | 0.41 | 0.70 | | 0.79 | 0.56 | 0.14 | | 0.73 | | 0.26 | 0.01 | 0.06 |
| Uniform Delay, d1 | 15.4 | 25.7 | | 14.7 | 21.2 | 12.6 | | 32.1 | | 21.3 | 18.6 | 13.4 |
| Progression Factor | 1.90 | 1.58 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 3.6 | | 11.4 | 1.8 | 0.1 | | 7.9 | | 0.4 | 0.0 | 0.0 |
| Delay (s) | 30.2 | 44.3 | | 26.0 | 23.0 | 12.7 | | 40.1 | | 21.7 | 18.7 | 13.4 |
| Level of Service | C | D | | C | C | B | | D | | C | B | B |
| Approach Delay (s) | | 42.1 | | | 22.1 | | | 40.1 | | | 17.7 | |
| Approach LOS | | D | | | C | | | D | | | B | |













Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 30.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 90.0 | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | 74.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ | | | | | | | |
| Volume (veh/h) | 0 | 518 | 247 | 6 | 531 | 0 | 0 | 0 | 0 | 32 | 0 | 572 | | | | | | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | | | | |
| Hourly flow rate (vph) | 0 | 576 | 274 | 7 | 590 | 0 | 0 | 0 | 0 | 36 | 0 | 636 | | | | | | | |
| Pedestrians | | | | | | | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 590 | | | 576 | | | 884 | 1179 | 288 | 891 | 1179 | 295 | | | | | | | |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | |
| p0 queue free % | 100 | | | 99 | | | 100 | 100 | 100 | 85 | 100 | 8 | | | | | | | |
| cM capacity (veh/h) | 961 | | | 973 | | | 19 | 184 | 700 | 231 | 184 | 692 | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | | | | | | | | |
| Volume Total | 288 | 288 | 274 | 203 | 393 | 36 | 636 | | | | | | | | | | | | |
| Volume Left | 0 | 0 | 0 | 7 | 0 | 36 | 0 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 274 | 0 | 0 | 0 | 636 | | | | | | | | | | | | |
| cSH | 1700 | 1700 | 1700 | 973 | 1700 | 231 | 692 | | | | | | | | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.16 | 0.01 | 0.23 | 0.15 | 0.92 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 1 | 0 | 13 | 307 | | | | | | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 23.4 | 41.6 | | | | | | | | | | | | |
| Lane LOS | | | | A | | C | | E | | | | | | | | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 40.6 | | | | | | | | | | | | |
| Approach LOS | | | | | | E | | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | |
| Average Delay | | | | 12.9 | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | | | | 59.7% | | ICU Level of Service | | B | | | | | | | | | | | |
| Analysis Period (min) | | | | 15 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 550 | 0 | 537 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 611 | 0 | 597 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 306 | 306 | 597 | | | |
| Volume Left (vph) | 306 | 306 | 597 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 7.0 | 7.0 | 5.8 | | | |
| Degree Utilization, x | 0.59 | 0.59 | 0.95 | | | |
| Capacity (veh/h) | 513 | 513 | 618 | | | |
| Control Delay (s) | 18.3 | 18.3 | 49.2 | | | |
| Approach Delay (s) | 18.3 | | 49.2 | | | |
| Approach LOS | C | | E | | | |
| Intersection Summary | | | | | | |
| Delay | | | 33.5 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 54.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue

















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 340 | 131 | 126 | 344 | 0 | 0 | 0 | 0 | 72 | 15 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3017 | | 1574 | 3149 | | | | | | 3014 | |
| Flt Permitted | | 1.00 | | 0.39 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3017 | | 645 | 3149 | | | | | | 3014 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 378 | 146 | 140 | 382 | 0 | 0 | 0 | 0 | 80 | 17 | 47 |
| RTOR Reduction (vph) | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 0 | 476 | 0 | 140 | 382 | 0 | 0 | 0 | 0 | 0 | 112 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1278 | | 481 | 1815 | | | | | | 957 | |
| v/s Ratio Prot | | c0.16 | | c0.03 | 0.12 | | | | | | c0.04 | |
| v/s Ratio Perm | | | | 0.13 | | | | | | | | |
| v/c Ratio | | 0.37 | | 0.29 | 0.21 | | | | | | 0.12 | |
| Uniform Delay, d1 | | 16.8 | | 12.6 | 8.7 | | | | | | 20.6 | |
| Progression Factor | | 1.00 | | 0.37 | 0.33 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 0.8 | | 1.4 | 0.2 | | | | | | 0.2 | |
| Delay (s) | | 17.6 | | 6.2 | 3.1 | | | | | | 20.8 | |
| Level of Service | | B | | A | A | | | | | | C | |
| Approach Delay (s) | | 17.6 | | | 3.9 | | | 0.0 | | | 20.8 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.0 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  | | | | |
| Volume (vph) | 68 | 344 | 0 | 0 | 400 | 76 | 70 | 65 | 42 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1629 | 3257 | | | 3073 | | | 4425 | | | | |
| Flt Permitted | 0.38 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 656 | 3257 | | | 3073 | | | 4425 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 76 | 382 | 0 | 0 | 444 | 84 | 78 | 72 | 47 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 382 | 0 | 0 | 510 | 0 | 0 | 165 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 485 | 1839 | | | 1265 | | | 1406 | | | | |
| v/s Ratio Prot | 0.02 | c0.12 | | | c0.17 | | | c0.04 | | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.16 | 0.21 | | | 0.40 | | | 0.12 | | | | |
| Uniform Delay, d1 | 12.1 | 9.1 | | | 17.6 | | | 20.6 | | | | |
| Progression Factor | 0.41 | 0.42 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.0 | | | 0.2 | | | | |
| Delay (s) | 5.7 | 4.1 | | | 18.6 | | | 20.7 | | | | |
| Level of Service | A | A | | | B | | | C | | | | |
| Approach Delay (s) | | 4.3 | | | 18.6 | | | 20.7 | | | 0.0 | |
| Approach LOS | | A | | | B | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.4 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 36.6% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 39 | 307 | 82 | 31 | 243 | 31 | 129 | 85 | 52 | 56 | 91 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 2939 | | | 2979 | | | 1792 | | | 1750 | |
| Flt Permitted | | 0.89 | | | 0.88 | | | 0.73 | | | 0.89 | |
| Satd. Flow (perm) | | 2639 | | | 2628 | | | 1347 | | | 1565 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 43 | 341 | 91 | 34 | 270 | 34 | 143 | 94 | 58 | 62 | 101 | 140 |
| RTOR Reduction (vph) | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 48 | 0 |
| Lane Group Flow (vph) | 0 | 443 | 0 | 0 | 325 | 0 | 0 | 281 | 0 | 0 | 255 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 934 | | | 930 | | | 663 | | | 770 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.17 | | | 0.12 | | | c0.21 | | | 0.16 | |
| v/c Ratio | | 0.47 | | | 0.35 | | | 0.42 | | | 0.33 | |
| Uniform Delay, d1 | | 16.3 | | | 15.5 | | | 10.6 | | | 10.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.7 | | | 1.0 | | | 2.0 | | | 1.2 | |
| Delay (s) | | 18.0 | | | 16.5 | | | 12.6 | | | 11.2 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 18.0 | | | 16.5 | | | 12.6 | | | 11.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 66.8% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 169 | 202 | 82 | 205 | 176 | 62 | 81 | 1012 | 109 | 75 | 471 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1548 | 2954 | | 1593 | 3512 | | 1487 | 3040 | 1347 | 1494 | 3011 | 1271 |
| Flt Permitted | 0.59 | 1.00 | | 0.54 | 1.00 | | 0.40 | 1.00 | 1.00 | 0.12 | 1.00 | 1.00 |
| Satd. Flow (perm) | 954 | 2954 | | 901 | 3512 | | 626 | 3040 | 1347 | 197 | 3011 | 1271 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 178 | 213 | 86 | 216 | 185 | 65 | 85 | 1065 | 115 | 79 | 496 | 84 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 0 | 41 | 0 | 0 | 0 | 68 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 178 | 247 | 0 | 216 | 209 | 0 | 85 | 1065 | 47 | 79 | 496 | 33 |
| Confl. Peds. (#/hr) | 31 | | 7 | 7 | | 31 | 37 | | 12 | 12 | | 37 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 4% | 0% | 0% | 6% | 2% | 3% | 5% | 0% | 3% | 6% | 4% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 33.0 | 33.0 | 36.0 | 33.0 | 33.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 365 | 973 | | 351 | 1157 | | 306 | 1180 | 523 | 144 | 1169 | 493 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.06 | | 0.01 | c0.35 | | c0.03 | 0.16 | |
| v/s Ratio Perm | 0.15 | | | c0.19 | | | 0.10 | | 0.03 | 0.21 | | 0.03 |
| v/c Ratio | 0.49 | 0.25 | | 0.62 | 0.18 | | 0.28 | 0.90 | 0.09 | 0.55 | 0.42 | 0.07 |
| Uniform Delay, d1 | 20.6 | 20.9 | | 22.0 | 20.3 | | 15.1 | 24.5 | 16.5 | 17.6 | 19.0 | 16.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.94 | 0.61 | 0.78 |
| Incremental Delay, d2 | 4.6 | 0.6 | | 7.8 | 0.3 | | 2.2 | 11.2 | 0.3 | 13.0 | 1.0 | 0.2 |
| Delay (s) | 25.2 | 21.5 | | 29.8 | 20.7 | | 17.4 | 35.7 | 16.8 | 47.0 | 12.6 | 13.0 |
| Level of Service | C | C | | C | C | | B | D | B | D | B | B |
| Approach Delay (s) | | 22.9 | | | 24.9 | | | 32.8 | | | 16.8 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.2 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 72.6% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 49 | 284 | 18 | 14 | 328 | 8 | 35 | 113 | 25 | 20 | 57 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1928 | 1382 | | 1954 | 1331 | | 1970 | 1452 | | 1928 | 1430 |
| Flt Permitted | | 0.91 | 1.00 | | 0.98 | 1.00 | | 0.93 | 1.00 | | 0.93 | 1.00 |
| Satd. Flow (perm) | | 1768 | 1382 | | 1924 | 1331 | | 1860 | 1452 | | 1811 | 1430 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 52 | 299 | 19 | 15 | 345 | 8 | 37 | 119 | 26 | 21 | 60 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 0 | 15 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 0 | 351 | 9 | 0 | 360 | 4 | 0 | 156 | 11 | 0 | 81 | 37 |
| Confl. Peds. (#/hr) | 5 | | 21 | 21 | | 5 | 9 | | 1 | 1 | | 9 |
| Heavy Vehicles (%) | 5% | 5% | 6% | 7% | 4% | 12% | 6% | 1% | 4% | 0% | 6% | 5% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 816 | 638 | | 888 | 614 | | 773 | 603 | | 752 | 594 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.19 | 0.00 | | c0.08 | 0.01 | | 0.04 | 0.03 |
| v/c Ratio | | 0.43 | 0.01 | | 0.41 | 0.01 | | 0.20 | 0.02 | | 0.11 | 0.06 |
| Uniform Delay, d1 | | 11.8 | 9.5 | | 11.6 | 9.4 | | 12.1 | 11.2 | | 11.6 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.47 | 0.45 | | 1.33 | 1.73 | | 0.96 | 0.93 |
| Incremental Delay, d2 | | 1.7 | 0.0 | | 1.3 | 0.0 | | 0.6 | 0.1 | | 0.3 | 0.2 |
| Delay (s) | | 13.4 | 9.5 | | 6.7 | 4.3 | | 16.7 | 19.4 | | 11.4 | 10.8 |
| Level of Service | | B | A | | A | A | | B | B | | B | B |
| Approach Delay (s) | | 13.2 | | | 6.7 | | | 17.1 | | | 11.1 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 62.7% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 75 | 260 | 10 | 15 | 278 | 30 | 13 | 247 | 26 | 30 | 70 | 64 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1520 | 3023 | | 1520 | 2996 | | 1520 | 2996 | | 1520 | 2823 | |
| Flt Permitted | 0.95 | 1.00 | | 0.57 | 1.00 | | 0.66 | 1.00 | | 0.55 | 1.00 | |
| Satd. Flow (perm) | 1520 | 3023 | | 910 | 2996 | | 1052 | 2996 | | 884 | 2823 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 289 | 11 | 17 | 309 | 33 | 14 | 274 | 29 | 33 | 78 | 71 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 13 | 0 | 0 | 12 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 83 | 296 | 0 | 17 | 329 | 0 | 14 | 291 | 0 | 33 | 107 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 164 | 1488 | | 308 | 1014 | | 437 | 1244 | | 367 | 1173 | |
| v/s Ratio Prot | c0.05 | 0.10 | | | c0.11 | | | c0.10 | | | 0.04 | |
| v/s Ratio Perm | | | | 0.02 | | | 0.01 | | | 0.04 | | |
| v/c Ratio | 0.51 | 0.20 | | 0.06 | 0.32 | | 0.03 | 0.23 | | 0.09 | 0.09 | |
| Uniform Delay, d1 | 27.4 | 9.3 | | 14.5 | 16.0 | | 11.3 | 12.3 | | 11.5 | 11.5 | |
| Progression Factor | 0.90 | 0.38 | | 0.81 | 0.74 | | 0.61 | 0.65 | | 1.10 | 1.20 | |
| Incremental Delay, d2 | 10.3 | 0.3 | | 0.3 | 0.8 | | 0.1 | 0.4 | | 0.5 | 0.2 | |
| Delay (s) | 34.9 | 3.8 | | 12.1 | 12.7 | | 7.0 | 8.4 | | 13.2 | 14.0 | |
| Level of Service | C | A | | B | B | | A | A | | B | B | |
| Approach Delay (s) | | 10.5 | | | 12.7 | | | 8.3 | | | 13.8 | |
| Approach LOS | | B | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.30 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 9.0 | | | |
| Intersection Capacity Utilization | | | 38.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 41 | 268 | 16 | 97 | 277 | 43 | 26 | 286 | 20 | 25 | 143 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.99 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1520 | 3014 | | 1520 | 2979 | | | 3215 | | | 3140 | |
| Flt Permitted | 0.54 | 1.00 | | 0.95 | 1.00 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | 862 | 3014 | | 1520 | 2979 | | | 2975 | | | 2822 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 46 | 298 | 18 | 108 | 308 | 48 | 29 | 318 | 22 | 28 | 159 | 47 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 19 | 0 | 0 | 7 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 46 | 309 | 0 | 108 | 337 | 0 | 0 | 362 | 0 | 0 | 205 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 265 | 927 | | 140 | 1329 | | | 1144 | | | 1085 | |
| v/s Ratio Prot | c0.10 | | | c0.07 | | | 0.11 | | | | | |
| v/s Ratio Perm | 0.05 | | | | | | c0.12 | | | 0.07 | | |
| v/c Ratio | 0.17 | 0.33 | | 0.77 | 0.25 | | | 0.32 | | | 0.19 | |
| Uniform Delay, d1 | 16.5 | 17.4 | | 28.8 | 11.2 | | | 14.0 | | | 13.3 | |
| Progression Factor | 0.59 | 0.58 | | 1.31 | 1.02 | | | 0.72 | | | 0.75 | |
| Incremental Delay, d2 | 1.4 | 1.0 | | 27.7 | 0.4 | | | 0.7 | | | 0.4 | |
| Delay (s) | 11.1 | 11.0 | | 65.5 | 11.8 | | | 10.8 | | | 10.3 | |
| Level of Service | B | B | | E | B | | | B | | | B | |
| Approach Delay (s) | 11.0 | | | 24.3 | | | 10.8 | | | 10.3 | | |
| Approach LOS | B | | | C | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.1 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 11.0 | | | | | |
| Intersection Capacity Utilization | | | 43.5% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 14 | 277 | 16 | 70 | 382 | 70 | 34 | 94 | 162 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.92 | | | | |
| Flt Protected | | 1.00 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1585 | | | 1560 | | | 3164 | | | | |
| Flt Permitted | | 0.97 | | | 0.91 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1545 | | | 1436 | | | 3164 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 16 | 308 | 18 | 78 | 424 | 78 | 38 | 104 | 180 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 138 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 340 | 0 | 0 | 573 | 0 | 0 | 184 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Effective Green, g (s) | | 41.9 | | | 41.9 | | | 15.1 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.23 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 996 | | | 926 | | | 735 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.22 | | | 0.40 | | | 0.06 | | | | |
| v/c Ratio | | 0.34 | | | 0.62 | | | 0.25 | | | | |
| Uniform Delay, d1 | | 5.3 | | | 6.8 | | | 20.3 | | | | |
| Progression Factor | | 2.08 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.9 | | | 3.1 | | | 0.8 | | | | |
| Delay (s) | | 11.8 | | | 9.9 | | | 21.1 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 11.8 | | | 9.9 | | | 21.1 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 66.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

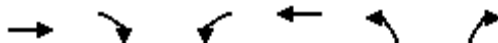


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 85 | 354 | 427 | 44 | 66 | 92 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 89 | 373 | 449 | 46 | 69 | 97 |
| Pedestrians | | 3 | 5 | | 21 | |
| Lane Width (ft) | | 16.0 | 16.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.87 | | | | 0.87 | 0.87 |
| vC, conflicting volume | 517 | | | | 1050 | 497 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 373 | | | | 984 | 350 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 91 | | | | 67 | 84 |
| cM capacity (veh/h) | 974 | | | | 214 | 594 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 462 | 496 | 69 | 97 | | |
| Volume Left | 89 | 0 | 69 | 0 | | |
| Volume Right | 0 | 46 | 0 | 97 | | |
| cSH | 974 | 1700 | 214 | 594 | | |
| Volume to Capacity | 0.09 | 0.29 | 0.33 | 0.16 | | |
| Queue Length 95th (ft) | 8 | 0 | 34 | 14 | | |
| Control Delay (s) | 2.6 | 0.0 | 29.7 | 12.2 | | |
| Lane LOS | A | | D | B | | |
| Approach Delay (s) | 2.6 | 0.0 | 19.5 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.0 | | | |
| Intersection Capacity Utilization | | | 66.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|-------|----------------------|------|
| Lane Configurations | 👉 | | | 👉👉 | 👈 | |
| Volume (vph) | 473 | 1 | 27 | 675 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | | |
| Lane Util. Factor | 1.00 | | | 0.95 | | |
| Frt | 1.00 | | | 1.00 | | |
| Flt Protected | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | 1714 | | | 3251 | | |
| Flt Permitted | 1.00 | | | 0.92 | | |
| Satd. Flow (perm) | 1714 | | | 3002 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 526 | 1 | 30 | 750 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 527 | 0 | 0 | 780 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 68.0 | | | 38.0 | | |
| Effective Green, g (s) | 64.0 | | | 38.0 | | |
| Actuated g/C Ratio | 0.71 | | | 0.42 | | |
| Clearance Time (s) | | | | 4.0 | | |
| Lane Grp Cap (vph) | 1219 | | | 1268 | | |
| v/s Ratio Prot | c0.31 | | | | | |
| v/s Ratio Perm | | | | c0.26 | | |
| v/c Ratio | 0.43 | | | 0.62 | | |
| Uniform Delay, d1 | 5.4 | | | 20.3 | | |
| Progression Factor | 0.02 | | | 1.00 | | |
| Incremental Delay, d2 | 0.5 | | | 2.2 | | |
| Delay (s) | 0.6 | | | 22.5 | | |
| Level of Service | A | | | C | | |
| Approach Delay (s) | 0.6 | | | 22.5 | 0.0 | |
| Approach LOS | A | | | C | A | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 13.7 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.53 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 43.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 185 | 193 | 25 | 561 | 0 | 0 | 0 | 0 | 3 | 0 | 263 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 206 | 214 | 28 | 623 | 0 | 0 | 0 | 0 | 3 | 0 | 292 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 623 | | | 206 | | | 992 | 992 | 210 | 782 | 884 | 623 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 623 | | | 206 | | | 992 | 992 | 210 | 782 | 884 | 623 |
| tC, single (s) | 4.1 | | | 5.5 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.9 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 99 | 100 | 31 |
| cM capacity (veh/h) | 968 | | | 984 | | | 62 | 241 | 802 | 282 | 278 | 424 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 137 | 283 | 651 | 3 | 292 | | | | | | | |
| Volume Left | 0 | 0 | 28 | 3 | 0 | | | | | | | |
| Volume Right | 0 | 214 | 0 | 0 | 292 | | | | | | | |
| cSH | 1700 | 1700 | 984 | 282 | 424 | | | | | | | |
| Volume to Capacity | 0.08 | 0.17 | 0.03 | 0.01 | 0.69 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 1 | 127 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.7 | 17.9 | 30.3 | | | | | | | |
| Lane LOS | | | A | C | D | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.7 | 30.2 | | | | | | | | |
| Approach LOS | | | | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.9% | | ICU Level of Service | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 188 | 0 | 586 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 209 | 0 | 651 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 104 | 104 | 651 | | | |
| Volume Left (vph) | 104 | 104 | 651 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.58 | 0.58 | 0.29 | | | |
| Departure Headway (s) | 6.8 | 6.8 | 4.9 | | | |
| Degree Utilization, x | 0.20 | 0.20 | 0.88 | | | |
| Capacity (veh/h) | 511 | 512 | 734 | | | |
| Control Delay (s) | 10.3 | 10.3 | 32.2 | | | |
| Approach Delay (s) | 10.3 | | 32.2 | | | |
| Approach LOS | B | | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 26.9 | | | |
| HCM Level of Service | | | D | | | |
| Intersection Capacity Utilization | | | 46.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 650 | 210 | 172 | 519 | 0 | 0 | 0 | 0 | 208 | 117 | 300 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3704 | 1122 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 2978 | 1202 | | 3372 | | | | | 1346 | 3704 | 1122 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 684 | 221 | 181 | 546 | 0 | 0 | 0 | 0 | 219 | 123 | 316 |
| RTOR Reduction (vph) | 0 | 0 | 123 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 92 |
| Lane Group Flow (vph) | 0 | 684 | 98 | 0 | 727 | 0 | 0 | 0 | 0 | 120 | 287 | 66 |
| Confl. Peds. (#/hr) | 5 | | 3 | 3 | | 5 | | | | | | |
| Heavy Vehicles (%) | 0% | 11% | 9% | 2% | 4% | 0% | 0% | 0% | 0% | 2% | 2% | 2% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 31.1 | 31.1 | | 60.9 | | | | | 21.5 | 21.5 | 58.6 |
| Effective Green, g (s) | | 31.1 | 31.1 | | 60.9 | | | | | 21.5 | 21.5 | 58.6 |
| Actuated g/C Ratio | | 0.22 | 0.22 | | 0.43 | | | | | 0.15 | 0.15 | 0.42 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 662 | 267 | | 1467 | | | | | 207 | 569 | 470 |
| v/s Ratio Prot | | c0.23 | | | c0.22 | | | | | c0.09 | 0.08 | |
| v/s Ratio Perm | | | 0.08 | | | | | | | | | 0.06 |
| v/c Ratio | | 1.03 | 0.37 | | 0.50 | | | | | 0.58 | 0.50 | 0.14 |
| Uniform Delay, d1 | | 54.5 | 46.1 | | 28.5 | | | | | 55.1 | 54.4 | 25.1 |
| Progression Factor | | 1.00 | 1.00 | | 0.02 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 43.8 | 3.9 | | 0.1 | | | | | 3.9 | 0.7 | 0.1 |
| Delay (s) | | 98.3 | 50.0 | | 0.6 | | | | | 59.0 | 55.1 | 25.3 |
| Level of Service | | F | D | | A | | | | | E | E | C |
| Approach Delay (s) | | 86.5 | | | 0.6 | | | 0.0 | | | 48.6 | |
| Approach LOS | | F | | | A | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | | Sum of lost time (s) | | | | 28.5 | | |
| Intersection Capacity Utilization | | | 61.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   | | | | |
| Volume (vph) | 212 | 646 | 0 | 0 | 453 | 112 | 238 | 150 | 195 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.92 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (prot) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2963 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | | | | |
| Satd. Flow (perm) | 1574 | 3366 | | | 3149 | 1457 | 1531 | 2963 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 236 | 718 | 0 | 0 | 503 | 124 | 264 | 167 | 217 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 98 | 0 | 135 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 236 | 718 | 0 | 0 | 503 | 26 | 222 | 291 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 71.1 | 71.1 | | | 24.5 | 24.5 | 18.4 | 18.4 | | | | |
| Effective Green, g (s) | 71.1 | 71.1 | | | 24.5 | 24.5 | 18.4 | 18.4 | | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.18 | 0.18 | 0.13 | 0.13 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 799 | 1709 | | | 551 | 255 | 201 | 389 | | | | |
| v/s Ratio Prot | 0.15 | c0.21 | | | c0.16 | | c0.14 | 0.10 | | | | |
| v/s Ratio Perm | | | | | | 0.02 | | | | | | |
| v/c Ratio | 0.30 | 0.42 | | | 0.91 | 0.10 | 1.10 | 0.75 | | | | |
| Uniform Delay, d1 | 19.9 | 21.6 | | | 56.7 | 48.5 | 60.8 | 58.6 | | | | |
| Progression Factor | 0.07 | 0.07 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 19.6 | 0.2 | 94.2 | 7.6 | | | | |
| Delay (s) | 1.5 | 1.5 | | | 76.3 | 48.7 | 155.0 | 66.2 | | | | |
| Level of Service | A | A | | | E | D | F | E | | | | |
| Approach Delay (s) | | 1.5 | | | 70.8 | | | 96.6 | | | 0.0 | |
| Approach LOS | | A | | | E | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.7 | | | HCM Level of Service | | D | | | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | | Sum of lost time (s) | | 28.0 | | | | |
| Intersection Capacity Utilization | | | 52.8% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 220 | 326 | 75 | 35 | 356 | 45 | 88 | 824 | 62 | 59 | 749 | 104 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1546 | 1556 | 1328 | 1595 | 1760 | | 1532 | 2990 | | 1509 | 2919 | |
| Flt Permitted | 0.23 | 1.00 | 1.00 | 0.42 | 1.00 | | 0.17 | 1.00 | | 0.15 | 1.00 | |
| Satd. Flow (perm) | 374 | 1556 | 1328 | 703 | 1760 | | 267 | 2990 | | 238 | 2919 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 232 | 343 | 79 | 37 | 375 | 47 | 93 | 867 | 65 | 62 | 788 | 109 |
| RTOR Reduction (vph) | 0 | 0 | 52 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 232 | 343 | 27 | 37 | 417 | 0 | 93 | 926 | 0 | 62 | 885 | 0 |
| Confl. Peds. (#/hr) | 33 | | 3 | 3 | | 33 | 42 | | 8 | 8 | | 42 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 3% | 8% | 6% | 0% | 7% | 5% | 4% | 5% | 11% | 2% | 6% | 9% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 38.2 | 31.2 | 31.2 | 32.4 | 28.3 | | 39.6 | 34.1 | | 39.6 | 34.1 | |
| Effective Green, g (s) | 36.2 | 32.2 | 31.2 | 30.4 | 28.3 | | 37.6 | 34.1 | | 37.6 | 34.1 | |
| Actuated g/C Ratio | 0.40 | 0.36 | 0.35 | 0.34 | 0.31 | | 0.42 | 0.38 | | 0.42 | 0.38 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 229 | 557 | 461 | 268 | 554 | | 175 | 1134 | | 163 | 1107 | |
| v/s Ratio Prot | c0.07 | 0.22 | | 0.00 | 0.24 | | c0.03 | c0.31 | | 0.02 | 0.30 | |
| v/s Ratio Perm | c0.34 | | 0.02 | 0.04 | | | 0.20 | | | 0.14 | | |
| v/c Ratio | 1.01 | 0.62 | 0.06 | 0.14 | 0.75 | | 0.53 | 0.82 | | 0.38 | 0.80 | |
| Uniform Delay, d1 | 26.3 | 23.8 | 19.6 | 20.4 | 27.7 | | 17.9 | 25.1 | | 17.7 | 24.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 62.9 | 5.0 | 0.2 | 0.2 | 9.2 | | 3.1 | 6.5 | | 1.5 | 6.1 | |
| Delay (s) | 89.2 | 28.8 | 19.8 | 20.7 | 36.8 | | 21.0 | 31.6 | | 19.2 | 30.9 | |
| Level of Service | F | C | B | C | D | | C | C | | B | C | |
| Approach Delay (s) | | 49.1 | | | 35.5 | | | 30.7 | | | 30.2 | |
| Approach LOS | | D | | | D | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 35.1 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 89.9 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 82.0% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |



















Halsted Rail Alternative Mitigated (2030) AM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 54 | 301 | 26 | 5 | 311 | 19 | 78 | 80 | 16 | 11 | 44 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.99 | | | 0.92 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 1.00 | |
| Satd. Flow (prot) | | 1910 | 1482 | | 1600 | 1198 | | 1904 | | | 1792 | |
| Flt Permitted | | 0.91 | 1.00 | | 1.00 | 1.00 | | 0.83 | | | 0.98 | |
| Satd. Flow (perm) | | 1761 | 1482 | | 1595 | 1198 | | 1624 | | | 1762 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 57 | 317 | 27 | 5 | 327 | 20 | 82 | 84 | 17 | 12 | 46 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 10 | 0 | 6 | 0 | 0 | 50 | 0 |
| Lane Group Flow (vph) | 0 | 374 | 13 | 0 | 332 | 10 | 0 | 177 | 0 | 0 | 94 | 0 |
| Confl. Peds. (#/hr) | 6 | | 11 | 11 | | 6 | 4 | | 8 | 8 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 7% | 0% | 0% | 5% | 16% | 0% | 0% | 0% | 10% | 0% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 867 | 730 | | 785 | 590 | | 675 | | | 732 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | 0.01 | | 0.21 | 0.01 | | c0.11 | | | 0.05 | |
| v/c Ratio | | 0.43 | 0.02 | | 0.42 | 0.02 | | 0.26 | | | 0.13 | |
| Uniform Delay, d1 | | 10.6 | 8.5 | | 10.6 | 8.4 | | 12.5 | | | 11.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.67 | 2.20 | | 1.00 | | | 1.51 | |
| Incremental Delay, d2 | | 1.6 | 0.0 | | 1.6 | 0.0 | | 0.9 | | | 0.4 | |
| Delay (s) | | 12.2 | 8.5 | | 19.3 | 18.6 | | 13.4 | | | 18.1 | |
| Level of Service | | B | A | | B | B | | B | | | B | |
| Approach Delay (s) | | 12.0 | | | 19.2 | | | 13.4 | | | 18.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.35 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | | |
| Intersection Capacity Utilization | | 77.4% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↰ | ↱ | | ↕ | |
| Volume (vph) | 86 | 219 | 35 | 6 | 176 | 6 | 84 | 228 | 22 | 9 | 53 | 73 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.93 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1664 | 1392 | | 1608 | 1497 | | 1734 | 1390 | | 1571 | |
| Flt Permitted | | 0.85 | 1.00 | | 0.99 | 1.00 | | 0.88 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1439 | 1392 | | 1592 | 1497 | | 1553 | 1390 | | 1541 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 91 | 231 | 37 | 6 | 185 | 6 | 88 | 240 | 23 | 9 | 56 | 77 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 4 | 0 | 0 | 12 | 0 | 39 | 0 |
| Lane Group Flow (vph) | 0 | 322 | 13 | 0 | 191 | 2 | 0 | 328 | 11 | 0 | 103 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 4 | | 17 | 17 | | 4 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 9% | 5% | 33% | 11% | 0% | 6% | 1% | 6% | 0% | 0% | 8% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 509 | 493 | | 563 | 530 | | 765 | 684 | | 759 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.22 | 0.01 | | 0.12 | 0.00 | | c0.21 | 0.01 | | 0.07 | |
| v/c Ratio | | 0.63 | 0.03 | | 0.34 | 0.00 | | 0.43 | 0.02 | | 0.14 | |
| Uniform Delay, d1 | | 17.5 | 13.7 | | 15.4 | 13.6 | | 10.6 | 8.4 | | 9.0 | |
| Progression Factor | | 1.87 | 3.33 | | 0.96 | 0.96 | | 0.32 | 0.25 | | 1.14 | |
| Incremental Delay, d2 | | 5.5 | 0.1 | | 1.6 | 0.0 | | 0.2 | 0.0 | | 0.4 | |
| Delay (s) | | 38.3 | 45.7 | | 16.4 | 13.1 | | 3.6 | 2.1 | | 10.6 | |
| Level of Service | | D | D | | B | B | | A | A | | B | |
| Approach Delay (s) | | 39.0 | | | 16.3 | | | 3.5 | | | 10.6 | |
| Approach LOS | | D | | | B | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 78.1% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 166 | 23 | 35 | 9 | 27 | 6 | 43 | 286 | 19 | 6 | 201 | 115 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.97 | | 0.99 | | | 1.00 | | | 1.00 | 0.95 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.98 | | | 0.99 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1772 | 1390 | | 1835 | | | 1970 | | | 1873 | 1328 |
| Flt Permitted | | 0.79 | 1.00 | | 0.94 | | | 0.95 | | | 0.99 | 1.00 |
| Satd. Flow (perm) | | 1466 | 1390 | | 1749 | | | 1874 | | | 1858 | 1328 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 184 | 26 | 39 | 10 | 30 | 7 | 48 | 318 | 21 | 7 | 223 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 23 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 65 |
| Lane Group Flow (vph) | 0 | 210 | 16 | 0 | 42 | 0 | 0 | 384 | 0 | 0 | 230 | 63 |
| Confl. Peds. (#/hr) | 49 | | 22 | 22 | | 49 | 34 | | 17 | 17 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 9% | 0% | 7% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 9% | 9% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 647 | 577 | | 457 | | | 923 | | | 915 | 654 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.09 | 0.01 | | 0.02 | | | c0.20 | | | 0.12 | 0.05 |
| v/c Ratio | | 0.32 | 0.03 | | 0.09 | | | 0.42 | | | 0.25 | 0.10 |
| Uniform Delay, d1 | | 12.8 | 11.2 | | 18.2 | | | 10.5 | | | 9.6 | 8.8 |
| Progression Factor | | 0.85 | 1.52 | | 1.00 | | | 0.42 | | | 0.53 | 0.31 |
| Incremental Delay, d2 | | 1.1 | 0.1 | | 0.4 | | | 1.1 | | | 0.6 | 0.3 |
| Delay (s) | | 12.1 | 17.2 | | 18.6 | | | 5.6 | | | 5.7 | 3.0 |
| Level of Service | | B | B | | B | | | A | | | A | A |
| Approach Delay (s) | | 12.9 | | | 18.6 | | | 5.6 | | | 4.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 7.6 | | | | HCM Level of Service | | | | A | |
| HCM Volume to Capacity ratio | | | 0.36 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 60.7% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|--------|-------|-------|----------------------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 990 | 222 | 333 | 1149 | 0 | 0 | 0 | 0 | 275 | 201 | 376 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 0.97 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | 0.99 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | 1.00 | 1.00 | | | | | 1.00 | 0.94 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 4322 | | 3083 | 3226 | | | | | 1419 | 2711 | 1355 |
| Flt Permitted | | 1.00 | | 0.16 | 1.00 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 4322 | | 526 | 3226 | | | | | 1419 | 2711 | 1355 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 1042 | 234 | 351 | 1209 | 0 | 0 | 0 | 0 | 289 | 212 | 396 |
| RTOR Reduction (vph) | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 46 |
| Lane Group Flow (vph) | 0 | 1242 | 0 | 351 | 1209 | 0 | 0 | 0 | 0 | 234 | 407 | 164 |
| Confl. Peds. (#/hr) | 6 | | 4 | 4 | | 6 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 11% | 7% | 4% | 6% | 0% | 0% | 0% | 0% | 6% | 4% | 8% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 43.2 | | 58.1 | 56.6 | | | | | 21.4 | 21.4 | 21.4 |
| Effective Green, g (s) | | 43.2 | | 58.1 | 56.6 | | | | | 21.4 | 21.4 | 21.4 |
| Actuated g/C Ratio | | 0.48 | | 0.65 | 0.63 | | | | | 0.24 | 0.24 | 0.24 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 2075 | | 592 | 2029 | | | | | 337 | 645 | 322 |
| v/s Ratio Prot | | 0.29 | | 0.06 | c0.37 | | | | | | | |
| v/s Ratio Perm | | | | 0.32 | | | | | | c0.16 | 0.15 | 0.12 |
| v/c Ratio | | 0.60 | | 0.59 | 0.60 | | | | | 0.69 | 0.63 | 0.51 |
| Uniform Delay, d1 | | 17.1 | | 19.3 | 9.9 | | | | | 31.3 | 30.8 | 29.7 |
| Progression Factor | | 1.00 | | 0.65 | 0.61 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.3 | | 0.7 | 0.5 | | | | | 6.3 | 2.1 | 1.5 |
| Delay (s) | | 18.4 | | 13.3 | 6.6 | | | | | 37.6 | 32.9 | 31.2 |
| Level of Service | | B | | B | A | | | | | D | C | C |
| Approach Delay (s) | | 18.4 | | | 8.1 | | | 0.0 | | | 33.7 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.8 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 109.9% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 311 | 954 | 0 | 0 | 933 | 234 | 549 | 365 | 681 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.91 | | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1503 | 3138 | | | 4349 | | | 4339 | | | | |
| Flt Permitted | 0.12 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 192 | 3138 | | | 4349 | | | 4339 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 327 | 1004 | 0 | 0 | 982 | 246 | 578 | 384 | 717 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 48 | 0 | 0 | 31 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 327 | 1004 | 0 | 0 | 1180 | 0 | 0 | 1648 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 4 | | | | | 4 | | | | | | |
| Heavy Vehicles (%) | 10% | 9% | 0% | 0% | 6% | 4% | 4% | 3% | 5% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | Perm | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | | 8 | | | | | |
| Actuated Green, G (s) | 40.0 | 40.0 | | | 27.0 | | | 38.0 | | | | |
| Effective Green, g (s) | 40.0 | 40.0 | | | 27.0 | | | 38.0 | | | | |
| Actuated g/C Ratio | 0.44 | 0.44 | | | 0.30 | | | 0.42 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 187 | 1395 | | | 1305 | | | 1832 | | | | |
| v/s Ratio Prot | c0.14 | 0.32 | | | 0.27 | | | | | | | |
| v/s Ratio Perm | c0.64 | | | | | | | 0.38 | | | | |
| v/c Ratio | 1.75 | 0.72 | | | 0.90 | | | 1.09dr | | | | |
| Uniform Delay, d1 | 19.9 | 20.4 | | | 30.3 | | | 24.2 | | | | |
| Progression Factor | 1.31 | 0.49 | | | 0.63 | | | 1.00 | | | | |
| Incremental Delay, d2 | 354.2 | 2.6 | | | 8.2 | | | 6.8 | | | | |
| Delay (s) | 380.2 | 12.6 | | | 27.3 | | | 31.0 | | | | |
| Level of Service | F | B | | | C | | | C | | | | |
| Approach Delay (s) | | 102.9 | | | 27.3 | | | 31.0 | | | 0.0 | |
| Approach LOS | | F | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 52.5 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 1.27 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 109.9% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 105 | 941 | 226 | 78 | 874 | 51 | 226 | 178 | 40 | 76 | 111 | 91 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.93 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3061 | 1291 | 1604 | 3231 | | 1446 | 3008 | | 1544 | 2784 | |
| Flt Permitted | 0.20 | 1.00 | 1.00 | 0.20 | 1.00 | | 0.55 | 1.00 | | 0.61 | 1.00 | |
| Satd. Flow (perm) | 331 | 3061 | 1291 | 331 | 3231 | | 835 | 3008 | | 990 | 2784 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 111 | 991 | 238 | 82 | 920 | 54 | 238 | 187 | 42 | 80 | 117 | 96 |
| RTOR Reduction (vph) | 0 | 0 | 105 | 0 | 4 | 0 | 0 | 22 | 0 | 0 | 78 | 0 |
| Lane Group Flow (vph) | 111 | 991 | 133 | 82 | 970 | 0 | 238 | 207 | 0 | 80 | 135 | 0 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 9 | | 6 | 6 | | 9 |
| Heavy Vehicles (%) | 2% | 8% | 5% | 3% | 5% | 3% | 10% | 3% | 2% | 3% | 7% | 4% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 51.6 | 43.7 | 50.2 | 44.4 | 40.1 | | 25.1 | 18.6 | | 20.9 | 16.5 | |
| Effective Green, g (s) | 51.6 | 43.7 | 50.2 | 44.4 | 40.1 | | 25.1 | 18.6 | | 20.9 | 16.5 | |
| Actuated g/C Ratio | 0.57 | 0.49 | 0.56 | 0.49 | 0.45 | | 0.28 | 0.21 | | 0.23 | 0.18 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 298 | 1486 | 720 | 224 | 1440 | | 277 | 622 | | 257 | 510 | |
| v/s Ratio Prot | c0.03 | c0.32 | 0.01 | 0.02 | 0.30 | | c0.06 | 0.07 | | 0.02 | 0.05 | |
| v/s Ratio Perm | 0.18 | | 0.09 | 0.16 | | | c0.18 | | | 0.06 | | |
| v/c Ratio | 0.37 | 0.67 | 0.18 | 0.37 | 0.67 | | 0.86 | 0.33 | | 0.31 | 0.26 | |
| Uniform Delay, d1 | 19.7 | 17.6 | 9.8 | 22.8 | 19.8 | | 29.8 | 30.4 | | 28.0 | 31.5 | |
| Progression Factor | 0.80 | 0.66 | 0.89 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.1 | 1.4 | 0.1 | 1.0 | 2.5 | | 22.3 | 1.1 | | 0.7 | 1.0 | |
| Delay (s) | 17.7 | 13.1 | 8.8 | 23.9 | 22.3 | | 52.1 | 31.5 | | 28.7 | 32.5 | |
| Level of Service | B | B | A | C | C | | D | C | | C | C | |
| Approach Delay (s) | | 12.7 | | | 22.4 | | | 42.0 | | | 31.5 | |
| Approach LOS | | B | | | C | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 22.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 76.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont Street & Ashland Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 62 | 329 | 286 | 81 | 215 | 102 | 329 | 382 | 161 | 91 | 258 | 54 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1635 | 2916 | | 1463 | 3047 | | 1589 | 3182 | | 1549 | 3135 | |
| Flt Permitted | 0.52 | 1.00 | | 0.23 | 1.00 | | 0.46 | 1.00 | | 0.44 | 1.00 | |
| Satd. Flow (perm) | 888 | 2916 | | 359 | 3047 | | 772 | 3182 | | 713 | 3135 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 65 | 346 | 301 | 85 | 226 | 107 | 346 | 402 | 169 | 96 | 272 | 57 |
| RTOR Reduction (vph) | 0 | 144 | 0 | 0 | 52 | 0 | 0 | 43 | 0 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 503 | 0 | 85 | 281 | 0 | 346 | 528 | 0 | 96 | 312 | 0 |
| Confl. Peds. (#/hr) | 20 | | | | | 20 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 4% | 5% | 6% | 13% | 6% | 5% | 4% | 6% | 5% | 3% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Effective Green, g (s) | 35.4 | 28.4 | | 36.2 | 28.8 | | 53.2 | 41.9 | | 38.6 | 31.3 | |
| Actuated g/C Ratio | 0.34 | 0.27 | | 0.34 | 0.27 | | 0.51 | 0.40 | | 0.37 | 0.30 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 349 | 789 | | 202 | 836 | | 530 | 1270 | | 320 | 935 | |
| v/s Ratio Prot | 0.01 | c0.17 | | c0.03 | 0.09 | | c0.11 | 0.17 | | 0.02 | 0.10 | |
| v/s Ratio Perm | 0.05 | | | 0.12 | | | c0.22 | | | 0.09 | | |
| v/c Ratio | 0.19 | 0.64 | | 0.42 | 0.34 | | 0.65 | 0.42 | | 0.30 | 0.33 | |
| Uniform Delay, d1 | 24.0 | 33.8 | | 24.8 | 30.5 | | 16.6 | 22.7 | | 22.4 | 28.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 3.9 | | 1.7 | 1.1 | | 3.0 | 1.0 | | 0.6 | 1.0 | |
| Delay (s) | 24.3 | 37.7 | | 26.4 | 31.6 | | 19.6 | 23.7 | | 23.0 | 29.7 | |
| Level of Service | C | D | | C | C | | B | C | | C | C | |
| Approach Delay (s) | | 36.4 | | | 30.5 | | | 22.2 | | | 28.2 | |
| Approach LOS | | D | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.7 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.61 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | Sum of lost time (s) | | | 14.0 | | | | | |
| Intersection Capacity Utilization | | | 73.3% | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street
























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  | |  |  | |
| Volume (vph) | 169 | 402 | 612 | 6 | 409 | 110 | 201 | 617 | 7 | 84 | 385 | 105 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | 3.0 | 4.0 | | | 4.0 | | 3.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 0.97 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | | 0.97 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1659 | 2533 | | | 2888 | | 2786 | 3187 | | 1451 | 2800 | |
| Flt Permitted | 0.25 | 1.00 | | | 0.94 | | 0.35 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | 440 | 2533 | | | 2714 | | 1032 | 3187 | | 421 | 2800 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 188 | 447 | 680 | 7 | 454 | 122 | 223 | 686 | 8 | 93 | 428 | 117 |
| RTOR Reduction (vph) | 0 | 200 | 0 | 0 | 24 | 0 | 0 | 1 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 188 | 927 | 0 | 0 | 559 | 0 | 223 | 693 | 0 | 93 | 525 | 0 |
| Confl. Peds. (#/hr) | 9 | | 11 | 11 | | 9 | 11 | | 14 | 14 | | 11 |
| Heavy Vehicles (%) | 3% | 6% | 18% | 50% | 6% | 6% | 7% | 3% | 50% | 6% | 7% | 2% |
| Turn Type | pm+pt | | Perm | | | pm+pt | | | pm+pt | | | |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 47.2 | 47.2 | | | 32.7 | | 52.4 | 43.4 | | 50.2 | 42.8 | |
| Effective Green, g (s) | 47.2 | 47.2 | | | 32.7 | | 52.4 | 43.4 | | 50.2 | 42.8 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | | 0.30 | | 0.48 | 0.39 | | 0.46 | 0.39 | |
| Clearance Time (s) | 3.0 | 4.0 | | | 4.0 | | 3.0 | 4.0 | | 4.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 316 | 1087 | | | 807 | | 635 | 1257 | | 261 | 1089 | |
| v/s Ratio Prot | 0.06 | c0.37 | | | | | c0.03 | c0.22 | | 0.02 | 0.19 | |
| v/s Ratio Perm | 0.19 | | | | 0.21 | | 0.14 | | | 0.14 | | |
| v/c Ratio | 0.59 | 0.95dr | | | 0.69 | | 0.35 | 0.55 | | 0.36 | 0.48 | |
| Uniform Delay, d1 | 21.6 | 28.3 | | | 34.2 | | 16.9 | 25.8 | | 18.2 | 25.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 0.92 | 0.72 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.0 | 6.6 | | | 2.6 | | 0.3 | 1.5 | | 0.8 | 1.5 | |
| Delay (s) | 24.6 | 34.9 | | | 36.8 | | 15.8 | 20.0 | | 19.0 | 26.8 | |
| Level of Service | C | C | | | D | | B | C | | B | C | |
| Approach Delay (s) | | 33.4 | | | 36.8 | | | 19.0 | | | 25.7 | |
| Approach LOS | | C | | | D | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.7 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.67 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 110.0 | Sum of lost time (s) | | | 10.0 | | | | | |
| Intersection Capacity Utilization | | | 85.7% | ICU Level of Service | | | E | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1069: Vermont Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  |  |  |  |  |
| Volume (vph) | 52 | 117 | 343 | 858 | 132 | 13 | 112 | 809 | 278 | 10 | 968 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1676 | 1962 | 1435 | 3159 | 1939 | | 1660 | 3288 | 1395 | 1139 | 3257 | 1425 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.10 | 1.00 | 1.00 | 0.33 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1676 | 1962 | 1435 | 3159 | 1939 | | 183 | 3288 | 1395 | 401 | 3257 | 1425 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 54 | 121 | 354 | 885 | 136 | 13 | 115 | 834 | 287 | 10 | 998 | 46 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 3 | 0 | 0 | 0 | 84 | 0 | 0 | 29 |
| Lane Group Flow (vph) | 54 | 121 | 345 | 885 | 146 | 0 | 115 | 834 | 203 | 10 | 998 | 17 |
| Confl. Peds. (#/hr) | 10 | | 16 | 16 | | 10 | 4 | | 6 | 6 | | 4 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | | | | | | |
| Heavy Vehicles (%) | 2% | 4% | 5% | 5% | 4% | 0% | 3% | 4% | 8% | 50% | 5% | 6% |
| Turn Type | Prot | | pm+ov | Prot | | | pm+pt | | pm+ov | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | 5 | 3 | 8 | | 5 | 2 | 3 | 1 | 6 | 7 |
| Permitted Phases | | | 4 | | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 6.9 | 12.9 | 28.7 | 29.0 | 35.0 | | 54.1 | 48.7 | 77.7 | 35.7 | 34.3 | 41.2 |
| Effective Green, g (s) | 6.9 | 12.9 | 28.7 | 29.0 | 35.0 | | 54.1 | 48.7 | 77.7 | 35.7 | 34.3 | 41.2 |
| Actuated g/C Ratio | 0.06 | 0.12 | 0.26 | 0.26 | 0.32 | | 0.49 | 0.44 | 0.71 | 0.32 | 0.31 | 0.37 |
| Clearance Time (s) | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 105 | 230 | 374 | 833 | 617 | | 302 | 1456 | 985 | 140 | 1016 | 534 |
| v/s Ratio Prot | 0.03 | 0.06 | c0.13 | c0.28 | 0.08 | | 0.05 | 0.25 | 0.05 | 0.00 | c0.31 | 0.00 |
| v/s Ratio Perm | | | 0.11 | | | | 0.13 | | 0.09 | 0.02 | | 0.01 |
| v/c Ratio | 0.51 | 0.53 | 0.92 | 1.06 | 0.24 | | 0.38 | 0.57 | 0.21 | 0.07 | 0.98 | 0.03 |
| Uniform Delay, d1 | 49.9 | 45.7 | 39.6 | 40.5 | 27.6 | | 20.0 | 22.9 | 5.5 | 25.3 | 37.5 | 21.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.13 | 1.12 | 1.12 |
| Incremental Delay, d2 | 4.2 | 2.2 | 27.8 | 49.1 | 0.2 | | 0.8 | 1.6 | 0.1 | 0.2 | 20.5 | 0.0 |
| Delay (s) | 54.1 | 47.8 | 67.4 | 89.6 | 27.8 | | 20.8 | 24.5 | 5.7 | 28.8 | 62.6 | 24.5 |
| Level of Service | D | D | E | F | C | | C | C | A | C | E | C |
| Approach Delay (s) | | 61.6 | | | 80.7 | | | 19.8 | | | 60.6 | |
| Approach LOS | | E | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 53.0 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 0.98 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 110.0 | | | | Sum of lost time (s) | | 17.0 | | | |
| Intersection Capacity Utilization | | | 88.9% | | | | ICU Level of Service | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013



| Movement | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR | SBR2 |
|-----------------------------------|-------|-------|-------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | | | | ↔ | | | ↔ | | |
| Volume (vph) | 427 | 952 | 570 | 14 | 3 | 14 | 3 | 47 | 10 | 0 | 2 | 4 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 |
| Total Lost time (s) | 5.5 | 4.0 | 5.0 | | | | 4.5 | | | 4.5 | | |
| Lane Util. Factor | 0.95 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 0.98 | | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Frt | 1.00 | 1.00 | 1.00 | | | | 0.91 | | | 0.95 | | |
| Flt Protected | 1.00 | 0.95 | 1.00 | | | | 0.99 | | | 0.97 | | |
| Satd. Flow (prot) | 2956 | 1477 | 1580 | | | | 1727 | | | 1852 | | |
| Flt Permitted | 1.00 | 0.23 | 1.00 | | | | 0.91 | | | 0.76 | | |
| Satd. Flow (perm) | 2956 | 350 | 1580 | | | | 1586 | | | 1449 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 449 | 1002 | 600 | 15 | 3 | 15 | 3 | 49 | 11 | 0 | 2 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 0 | 46 | 0 | 0 | 4 | 0 | 0 |
| Lane Group Flow (vph) | 449 | 1002 | 614 | 0 | 0 | 0 | 24 | 0 | 0 | 13 | 0 | 0 |
| Confl. Peds. (#/hr) | | 7 | | 6 | | 3 | | | | | 3 | |
| Confl. Bikes (#/hr) | | 1 | | | | | | | | | | |
| Heavy Vehicles (%) | 8% | 8% | 6% | 0% | 0% | 8% | 0% | 5% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | Perm | | Perm | Perm | | | | | |
| Protected Phases | 8 | 7 | 4 | | | | 2 | | | 6 | | |
| Permitted Phases | | 4 | | | 2 | 2 | | | 6 | | | |
| Actuated Green, G (s) | 16.5 | 86.2 | 86.2 | | | | 6.1 | | | 6.1 | | |
| Effective Green, g (s) | 16.5 | 86.2 | 86.2 | | | | 6.1 | | | 6.1 | | |
| Actuated g/C Ratio | 0.16 | 0.85 | 0.85 | | | | 0.06 | | | 0.06 | | |
| Clearance Time (s) | 5.5 | 4.0 | 5.0 | | | | 4.5 | | | 4.5 | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | | 3.0 | | | 3.0 | | |
| Lane Grp Cap (vph) | 479 | 1018 | 1338 | | | | 95 | | | 87 | | |
| v/s Ratio Prot | 0.15 | c0.63 | 0.39 | | | | | | | | | |
| v/s Ratio Perm | | c0.20 | | | | | c0.02 | | | 0.01 | | |
| v/c Ratio | 0.94 | 0.98 | 0.46 | | | | 0.25 | | | 0.15 | | |
| Uniform Delay, d1 | 42.1 | 14.0 | 2.0 | | | | 45.7 | | | 45.4 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | | |
| Incremental Delay, d2 | 28.1 | 24.2 | 1.1 | | | | 1.4 | | | 0.8 | | |
| Delay (s) | 70.3 | 38.2 | 3.1 | | | | 47.1 | | | 46.2 | | |
| Level of Service | E | D | A | | | | D | | | D | | |
| Approach Delay (s) | 70.3 | | 24.8 | | | | 47.1 | | | 46.2 | | |
| Approach LOS | E | | C | | | | D | | | D | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.6 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.91 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 101.8 | | | | Sum of lost time (s) | | | 8.5 | | |
| Intersection Capacity Utilization | | | 85.8% | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & S Wallance St

1/14/2013

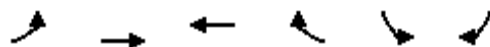


| | |
|------------------------|------|
| Movement | NER |
| Lane Configurations | FF |
| Volume (vph) | 421 |
| Ideal Flow (vphpl) | 1800 |
| Lane Width | 12 |
| Total Lost time (s) | 4.0 |
| Lane Util. Factor | 0.88 |
| Frpb, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 2470 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 2470 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 443 |
| RTOR Reduction (vph) | 0 |
| Lane Group Flow (vph) | 443 |
| Confl. Peds. (#/hr) | |
| Confl. Bikes (#/hr) | |
| Heavy Vehicles (%) | 9% |
| Turn Type | Over |
| Protected Phases | 7 |
| Permitted Phases | |
| Actuated Green, G (s) | 65.2 |
| Effective Green, g (s) | 65.2 |
| Actuated g/C Ratio | 0.64 |
| Clearance Time (s) | 4.0 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 1582 |
| v/s Ratio Prot | 0.18 |
| v/s Ratio Perm | |
| v/c Ratio | 0.28 |
| Uniform Delay, d1 | 8.0 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.1 |
| Delay (s) | 8.1 |
| Level of Service | A |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------|-------|-------|------|----------------------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 214 | 758 | 1303 | 66 | 41 | 235 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1629 | 3257 | 3234 | | 1629 | 1457 |
| Flt Permitted | 0.11 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | 191 | 3257 | 3234 | | 1629 | 1457 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 238 | 842 | 1448 | 73 | 46 | 261 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 238 | 842 | 1515 | 0 | 46 | 219 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | Perm | | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | 42.0 | 42.0 | 42.0 | | 15.0 | 15.0 |
| Effective Green, g (s) | 42.0 | 42.0 | 42.0 | | 15.0 | 15.0 |
| Actuated g/C Ratio | 0.65 | 0.65 | 0.65 | | 0.23 | 0.23 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 123 | 2105 | 2090 | | 376 | 336 |
| v/s Ratio Prot | | 0.26 | 0.47 | | 0.03 | |
| v/s Ratio Perm | c1.25 | | | | | c0.15 |
| v/c Ratio | 1.93 | 0.40 | 0.73 | | 0.12 | 0.65 |
| Uniform Delay, d1 | 11.5 | 5.5 | 7.7 | | 19.8 | 22.6 |
| Progression Factor | 1.00 | 1.00 | 0.77 | | 1.07 | 1.05 |
| Incremental Delay, d2 | 449.1 | 0.6 | 1.3 | | 0.7 | 9.5 |
| Delay (s) | 460.6 | 6.1 | 7.2 | | 21.8 | 33.4 |
| Level of Service | F | A | A | | C | C |
| Approach Delay (s) | | 106.2 | 7.2 | | 31.6 | |
| Approach LOS | | F | A | | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 46.6 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 1.59 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 66.1% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013

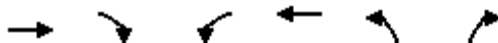


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|-------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 58 | 714 | 1287 | 196 | 135 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.98 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 2928 | 2977 | | 1464 | 1373 |
| Flt Permitted | | 0.70 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2068 | 2977 | | 1464 | 1373 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 61 | 752 | 1355 | 206 | 142 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 19 | 0 | 0 | 34 |
| Lane Group Flow (vph) | 0 | 813 | 1542 | 0 | 142 | 46 |
| Confl. Peds. (#/hr) | 1 | | | 1 | | |
| Confl. Bikes (#/hr) | 1 | | | 1 | | |
| Heavy Vehicles (%) | 4% | 9% | 8% | 12% | 9% | 4% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Effective Green, g (s) | | 38.0 | 38.0 | | 19.0 | 19.0 |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.29 | 0.29 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1209 | 1740 | | 428 | 401 |
| v/s Ratio Prot | | | c0.52 | | c0.10 | |
| v/s Ratio Perm | | 0.39 | | | | 0.03 |
| v/c Ratio | | 0.67 | 0.89 | | 0.33 | 0.11 |
| Uniform Delay, d1 | | 9.2 | 11.6 | | 18.0 | 16.8 |
| Progression Factor | | 0.69 | 1.00 | | 0.96 | 1.05 |
| Incremental Delay, d2 | | 2.8 | 7.1 | | 2.0 | 0.6 |
| Delay (s) | | 9.2 | 18.7 | | 19.3 | 18.2 |
| Level of Service | | A | B | | B | B |
| Approach Delay (s) | | 9.2 | 18.7 | | 18.9 | |
| Approach LOS | | A | B | | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 15.8 | | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | 0.70 | | | | |
| Actuated Cycle Length (s) | | 65.0 | | Sum of lost time (s) | | 8.0 |
| Intersection Capacity Utilization | | 82.2% | | ICU Level of Service | | E |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue

1/14/2013

























| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|-------|----------------------|------|
| Lane Configurations | ↩ | | ↩ | ↩ | ↩ | ↩ |
| Volume (vph) | 686 | 175 | 107 | 1182 | 482 | 83 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.97 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2222 | | 1770 | 2436 | 1844 | 1471 |
| Flt Permitted | 1.00 | | 0.12 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2222 | | 233 | 2436 | 1844 | 1471 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 700 | 179 | 109 | 1206 | 492 | 85 |
| RTOR Reduction (vph) | 12 | 0 | 0 | 0 | 0 | 59 |
| Lane Group Flow (vph) | 867 | 0 | 109 | 1206 | 492 | 26 |
| Confl. Peds. (#/hr) | | 4 | 4 | | | 8 |
| Heavy Vehicles (%) | 11% | 7% | 3% | 7% | 2% | 2% |
| Turn Type | | | Perm | | | Perm |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | 2 |
| Actuated Green, G (s) | 44.2 | | 44.2 | 44.2 | 24.4 | 24.4 |
| Effective Green, g (s) | 44.2 | | 44.2 | 44.2 | 24.4 | 24.4 |
| Actuated g/C Ratio | 0.56 | | 0.56 | 0.56 | 0.31 | 0.31 |
| Clearance Time (s) | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1250 | | 131 | 1370 | 572 | 457 |
| v/s Ratio Prot | 0.39 | | | c0.50 | c0.27 | |
| v/s Ratio Perm | | | 0.47 | | | 0.02 |
| v/c Ratio | 0.69 | | 0.83 | 0.88 | 0.86 | 0.06 |
| Uniform Delay, d1 | 12.3 | | 14.1 | 14.9 | 25.5 | 19.0 |
| Progression Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.7 | | 34.1 | 6.9 | 15.5 | 0.2 |
| Delay (s) | 14.0 | | 48.3 | 21.8 | 41.0 | 19.3 |
| Level of Service | B | | D | C | D | B |
| Approach Delay (s) | 14.0 | | | 24.0 | 37.8 | |
| Approach LOS | B | | | C | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 23.7 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.87 | | | |
| Actuated Cycle Length (s) | | | 78.6 | | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | | | 87.9% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 738 | 99 | 258 | 1220 | 9 | 111 | 0 | 187 | 1 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | 0.95 | |
| Satd. Flow (prot) | 1881 | 3213 | 1422 | 1589 | 3138 | 1366 | | 1642 | 1443 | | 969 | |
| Flt Permitted | 0.20 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | | 0.76 | 1.00 | | 0.61 | |
| Satd. Flow (perm) | 397 | 3213 | 1422 | 430 | 3138 | 1366 | | 1309 | 1443 | | 626 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 820 | 110 | 287 | 1356 | 10 | 123 | 0 | 208 | 1 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 0 | 3 | 0 | 0 | 175 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 820 | 57 | 287 | 1356 | 7 | 0 | 123 | 33 | 0 | 1 | 0 |
| Heavy Vehicles (%) | 0% | 10% | 4% | 4% | 9% | 12% | 18% | 0% | 6% | 100% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 44.4 | 44.4 | 44.4 | 63.7 | 63.7 | 63.7 | | 13.3 | 13.3 | | 13.3 | |
| Effective Green, g (s) | 44.4 | 44.4 | 44.4 | 63.7 | 63.7 | 63.7 | | 13.3 | 13.3 | | 13.3 | |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.75 | 0.75 | 0.75 | | 0.16 | 0.16 | | 0.16 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 207 | 1678 | 743 | 545 | 2352 | 1024 | | 205 | 226 | | 98 | |
| v/s Ratio Prot | | 0.26 | | 0.10 | c0.43 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.29 | | 0.01 | | c0.09 | 0.02 | | 0.00 | |
| v/c Ratio | 0.00 | 0.49 | 0.08 | 0.53 | 0.58 | 0.01 | | 0.60 | 0.14 | | 0.01 | |
| Uniform Delay, d1 | 9.7 | 13.0 | 10.1 | 4.9 | 4.7 | 2.7 | | 33.4 | 30.9 | | 30.3 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 1.0 | 0.2 | 0.9 | 0.3 | 0.0 | | 4.7 | 0.3 | | 0.0 | |
| Delay (s) | 9.8 | 14.0 | 10.3 | 5.8 | 5.0 | 2.7 | | 38.0 | 31.2 | | 30.3 | |
| Level of Service | A | B | B | A | A | A | | D | C | | C | |
| Approach Delay (s) | | 13.6 | | | 5.2 | | | 33.8 | | | 30.3 | |
| Approach LOS | | B | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.1 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.57 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | | 7.0 | | |
| Intersection Capacity Utilization | | | 55.0% | | | | ICU Level of Service | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|----------------------|-------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 13 | 817 | 844 | 45 | 24 | 9 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 12 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3038 | 3017 | | 1487 | |
| Flt Permitted | | 0.93 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2835 | 3017 | | 1487 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 14 | 908 | 938 | 50 | 27 | 10 |
| RTOR Reduction (vph) | 0 | 0 | 4 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 922 | 984 | 0 | 28 | 0 |
| Heavy Vehicles (%) | 5% | 5% | 5% | 5% | 5% | 5% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1040 | 2145 | | 116 | |
| v/s Ratio Prot | | | c0.33 | | c0.02 | |
| v/s Ratio Perm | | c0.33 | | | | |
| v/c Ratio | | 0.89 | 0.46 | | 0.24 | |
| Uniform Delay, d1 | | 26.7 | 5.6 | | 39.0 | |
| Progression Factor | | 1.00 | 0.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.1 | 0.2 | | 4.8 | |
| Delay (s) | | 37.9 | 0.3 | | 43.8 | |
| Level of Service | | D | A | | D | |
| Approach Delay (s) | | 37.9 | 0.3 | | 43.8 | |
| Approach LOS | | D | A | | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 18.9 | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | Sum of lost time (s) | | 25.0 |
| Intersection Capacity Utilization | | | 44.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 79 | 431 | 1 | 27 | 568 | 80 | 0 | 0 | 1 | 45 | 3 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.92 | | | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.98 | | | 0.86 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1729 | | | 3232 | | | 1427 | | | 1606 | 1277 |
| Flt Permitted | | 0.79 | | | 0.93 | | | 1.00 | | | 0.90 | 1.00 |
| Satd. Flow (perm) | | 1380 | | | 3013 | | | 1427 | | | 1513 | 1277 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 88 | 479 | 1 | 30 | 631 | 89 | 0 | 0 | 1 | 50 | 3 | 104 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 74 |
| Lane Group Flow (vph) | 0 | 568 | 0 | 0 | 738 | 0 | 0 | 0 | 0 | 0 | 53 | 30 |
| Confl. Peds. (#/hr) | 33 | | 13 | 13 | | 33 | 29 | | 13 | 13 | | 29 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 5% | 0% | 11% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 38.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 38.0 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.58 | | | 0.10 | | | 0.26 | 0.29 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 583 | | | 1775 | | | 143 | | | 401 | 369 |
| v/s Ratio Prot | | | | | c0.06 | | | 0.00 | | | c0.02 | |
| v/s Ratio Perm | | c0.41 | | | 0.18 | | | | | | c0.01 | 0.02 |
| v/c Ratio | | 0.97 | | | 0.42 | | | 0.00 | | | 0.13 | 0.08 |
| Uniform Delay, d1 | | 25.5 | | | 10.6 | | | 36.5 | | | 25.8 | 23.3 |
| Progression Factor | | 1.00 | | | 2.17 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 31.5 | | | 0.6 | | | 0.0 | | | 0.7 | 0.4 |
| Delay (s) | | 57.0 | | | 23.5 | | | 36.5 | | | 26.5 | 23.7 |
| Level of Service | | E | | | C | | | D | | | C | C |
| Approach Delay (s) | | 57.0 | | | 23.5 | | | 36.5 | | | 24.7 | |
| Approach LOS | | E | | | C | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.5 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 72.4% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1001: 95th Street & Wentworth Avenue

1/14/2013





















| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 39 | 598 | 28 | 35 | 1014 | 58 | 36 | 35 | 48 | 23 | 26 | 87 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 16 | 10 | 10 | 16 | 8 | 15 | 8 | 8 | 14 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | | 0.95 | | | 0.91 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1557 | 3022 | | 1587 | 3021 | | | 1816 | | | 1706 | |
| Flt Permitted | 0.17 | 1.00 | | 0.36 | 1.00 | | | 0.89 | | | 0.95 | |
| Satd. Flow (perm) | 277 | 3022 | | 604 | 3021 | | | 1649 | | | 1630 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 41 | 629 | 29 | 37 | 1067 | 61 | 38 | 37 | 51 | 24 | 27 | 92 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 33 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 41 | 653 | 0 | 37 | 1122 | 0 | 0 | 93 | 0 | 0 | 122 | 0 |
| Confl. Peds. (#/hr) | 145 | | 16 | 16 | | 145 | 17 | | 19 | 19 | | 17 |
| Confl. Bikes (#/hr) | 5 | | | | | 5 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 0% | 5% | 0% | 0% | 4% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 22.0 | | | 22.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | | 23.0 | | | 23.0 | |
| Actuated g/C Ratio | 0.52 | 0.52 | | 0.52 | 0.52 | | | 0.35 | | | 0.35 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | 145 | 1581 | | 316 | 1580 | | | 583 | | | 577 | |
| v/s Ratio Prot | | 0.22 | | | c0.37 | | | | | | | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | | | 0.06 | | | c0.07 | |
| v/c Ratio | 0.28 | 0.41 | | 0.12 | 0.71 | | | 0.16 | | | 0.21 | |
| Uniform Delay, d1 | 8.7 | 9.4 | | 7.9 | 11.8 | | | 14.4 | | | 14.7 | |
| Progression Factor | 1.00 | 1.00 | | 0.70 | 1.41 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 4.8 | 0.8 | | 0.7 | 2.4 | | | 0.6 | | | 0.8 | |
| Delay (s) | 13.5 | 10.2 | | 6.2 | 19.1 | | | 15.0 | | | 15.5 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 10.4 | | | 18.6 | | | 15.0 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1002: 95th Street & Lafayette Avenue











1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | | | |  |  |  |
| Volume (vph) | 25 | 789 | 5 | 32 | 637 | 41 | 0 | 0 | 0 | 586 | 89 | 379 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.67 | | | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.93 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 793 | 3379 | | 1710 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Flt Permitted | 0.40 | 1.00 | | 0.14 | 1.00 | 1.00 | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 331 | 3379 | | 248 | 3226 | 514 | | | | 3285 | 1731 | 1481 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 26 | 831 | 5 | 34 | 671 | 43 | 0 | 0 | 0 | 617 | 94 | 399 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 166 |
| Lane Group Flow (vph) | 26 | 836 | 0 | 34 | 671 | 24 | 0 | 0 | 0 | 617 | 94 | 233 |
| Confl. Peds. (#/hr) | 350 | | 4 | 4 | | 350 | 8 | | 6 | 6 | | 8 |
| Confl. Bikes (#/hr) | 7 | | 1 | 1 | | 7 | | | | | | |
| Heavy Vehicles (%) | 100% | 1% | 20% | 0% | 6% | 100% | 0% | 0% | 0% | 1% | 4% | 1% |
| Turn Type | pm+pt | | | pm+pt | | Perm | | | | Split | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Effective Green, g (s) | 43.0 | 43.0 | | 73.0 | 73.0 | 73.0 | | | | 30.0 | 30.0 | 30.0 |
| Actuated g/C Ratio | 0.33 | 0.33 | | 0.56 | 0.56 | 0.56 | | | | 0.23 | 0.23 | 0.23 |
| Clearance Time (s) | 5.0 | 5.0 | | 3.0 | 3.0 | 3.0 | | | | 5.0 | 5.0 | 5.0 |
| Lane Grp Cap (vph) | 159 | 1118 | | 634 | 1812 | 289 | | | | 758 | 399 | 342 |
| v/s Ratio Prot | 0.02 | c0.25 | | 0.02 | c0.21 | | | | | c0.19 | 0.05 | |
| v/s Ratio Perm | 0.04 | | | 0.01 | | 0.05 | | | | | | 0.16 |
| v/c Ratio | 0.16 | 0.75 | | 0.05 | 0.37 | 0.08 | | | | 0.81 | 0.24 | 0.68 |
| Uniform Delay, d1 | 31.6 | 38.7 | | 15.2 | 15.8 | 13.1 | | | | 47.4 | 40.7 | 45.6 |
| Progression Factor | 0.85 | 0.86 | | 0.33 | 0.75 | 1.24 | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.1 | 4.4 | | 0.1 | 0.4 | 0.4 | | | | 9.3 | 1.4 | 10.5 |
| Delay (s) | 28.9 | 37.6 | | 5.1 | 12.2 | 16.6 | | | | 56.7 | 42.1 | 56.1 |
| Level of Service | C | D | | A | B | B | | | | E | D | E |
| Approach Delay (s) | | 37.3 | | | 12.2 | | | 0.0 | | | 55.2 | |
| Approach LOS | | D | | | B | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 37.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 53.2% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1003: 95th Street & State Street

1/14/2013

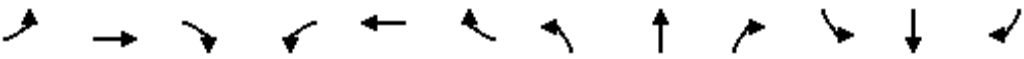
| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|---|-------|---|---|---|------|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  |  |  | |  |
| Volume (vph) | 340 | 815 | 220 | 54 | 578 | 287 | 102 | 251 | 55 | 39 | 0 | 30 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Lane Util. Factor | 0.97 | 0.95 | | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | 0.67 | | 1.00 | 0.91 | 1.00 | | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (prot) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.99 | 1.00 | 0.95 | | 1.00 |
| Satd. Flow (perm) | 3285 | 3262 | | 1710 | 3138 | 1018 | | 3301 | 1359 | 855 | | 734 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 358 | 858 | 232 | 57 | 608 | 302 | 107 | 264 | 58 | 41 | 0 | 32 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 228 | 0 | 0 | 42 | 0 | 0 | 30 |
| Lane Group Flow (vph) | 358 | 1072 | 0 | 57 | 608 | 74 | 0 | 371 | 16 | 41 | 0 | 2 |
| Confl. Peds. (#/hr) | 327 | | 13 | 13 | | 327 | 6 | | 60 | 60 | | 6 |
| Confl. Bikes (#/hr) | 6 | | | | | 6 | | | | | | |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 9% | 1% | 0% | 3% | 2% | 100% | 0% | 100% |
| Turn Type | Prot | | | Prot | | Perm | Split | | Perm | Prot | | custom |
| Protected Phases | 7 | 4 | | 3 | 8 | | 2 | 2 | | 6 | | |
| Permitted Phases | | | | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Effective Green, g (s) | 44.0 | 68.0 | | 8.0 | 32.0 | 32.0 | | 28.0 | 28.0 | 8.0 | | 8.0 |
| Actuated g/C Ratio | 0.34 | 0.52 | | 0.06 | 0.25 | 0.25 | | 0.22 | 0.22 | 0.06 | | 0.06 |
| Clearance Time (s) | 3.0 | 3.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | 1112 | 1706 | | 105 | 772 | 251 | | 711 | 293 | 53 | | 45 |
| v/s Ratio Prot | 0.11 | c0.33 | | 0.03 | c0.19 | | | c0.11 | | c0.05 | | |
| v/s Ratio Perm | | | | | | 0.07 | | | 0.01 | | | 0.00 |
| v/c Ratio | 0.32 | 0.63 | | 0.54 | 0.79 | 0.30 | | 0.52 | 0.06 | 0.77 | | 0.04 |
| Uniform Delay, d1 | 31.9 | 22.0 | | 59.2 | 45.8 | 39.8 | | 45.1 | 40.5 | 60.1 | | 57.4 |
| Progression Factor | 0.95 | 0.16 | | 1.00 | 1.00 | 1.00 | | 0.94 | 0.99 | 1.00 | | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.1 | | 18.7 | 8.0 | 3.0 | | 2.7 | 0.4 | 49.7 | | 0.4 |
| Delay (s) | 30.7 | 4.7 | | 77.9 | 53.8 | 42.8 | | 45.3 | 40.6 | 109.9 | | 57.8 |
| Level of Service | C | A | | E | D | D | | D | D | F | | E |
| Approach Delay (s) | | 11.1 | | | 51.8 | | | 44.7 | | | 87.0 | |
| Approach LOS | | B | | | D | | | D | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 68.3% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1004: 95th Street & Michigan Avenue

1/14/2013









| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|--------|------|--------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | | ↑ | ↑ | ↑ | |
| Volume (vph) | 0 | 893 | 166 | 105 | 839 | 0 | 74 | 0 | 89 | 9 | 15 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 11 | 11 | 8 | 12 | 12 | 12 | 14 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | 1.00 | | 0.98 | 1.00 | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | 0.97 | | 1.00 | 0.99 | 1.00 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.85 | 1.00 | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | 0.95 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2997 | | 1649 | 3149 | | 1388 | | 1451 | 1803 | 1857 | |
| Flt Permitted | | 1.00 | | 0.17 | 1.00 | | 0.74 | | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2997 | | 299 | 3149 | | 1082 | | 1451 | 1803 | 1857 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 992 | 184 | 117 | 932 | 0 | 82 | 0 | 99 | 10 | 17 | 8 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 1161 | 0 | 117 | 932 | 0 | 82 | 0 | 32 | 10 | 20 | 0 |
| Confl. Peds. (#/hr) | 67 | | 19 | 19 | | 67 | 38 | | 12 | 12 | | 38 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 11% | 0% | 5% | 0% | 19% | 0% | 3% | 0% | 0% | 0% |
| Turn Type | | | | Perm | | | custom | | custom | | Perm | |
| Protected Phases | | 4 | | | 8 | | | | | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | 2 | | 6 | |
| Actuated Green, G (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Effective Green, g (s) | | 60.0 | | 60.0 | 60.0 | | 32.0 | | 32.0 | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.60 | | 0.60 | 0.60 | | 0.32 | | 0.32 | | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | | 4.0 | 4.0 | | 4.0 | | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1798 | | 179 | 1889 | | 346 | | 464 | | 577 | 594 |
| v/s Ratio Prot | | 0.39 | | | 0.30 | | | | | | | 0.01 |
| v/s Ratio Perm | | | | c0.39 | | | c0.08 | | 0.02 | | 0.01 | |
| v/c Ratio | | 0.65 | | 0.65 | 0.49 | | 0.24 | | 0.07 | | 0.02 | 0.03 |
| Uniform Delay, d1 | | 13.1 | | 13.2 | 11.4 | | 25.0 | | 23.6 | | 23.2 | 23.4 |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 1.8 | | 17.1 | 0.9 | | 1.6 | | 0.3 | | 0.1 | 0.1 |
| Delay (s) | | 14.9 | | 30.3 | 12.3 | | 26.6 | | 23.9 | | 23.3 | 23.5 |
| Level of Service | | B | | C | B | | C | | C | | C | C |
| Approach Delay (s) | | 14.9 | | | 14.3 | | | 25.1 | | | | 23.4 |
| Approach LOS | | B | | | B | | | C | | | | C |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.5 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 61.4% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1005: 98th Place & Halsted Street



















1/14/2013

| |  | | | | | | | | | | | |
|---|--|------|--------|---|---|---|---|---|------|------|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | |  |  |  |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 301 | 0 | 1230 | 215 | 686 | 0 | 0 | 792 | 490 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 12 | 12 | 10 | 10 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | | | 4.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 0.98 | |
| Flpb, ped/bikes | | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Frt | | | | 1.00 | | 0.85 | 1.00 | 1.00 | | | 0.94 | |
| Flt Protected | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Flt Permitted | | | | 0.95 | | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1540 | | 1530 | 1535 | 4327 | | | 4271 | |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 808 | 500 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 307 | 0 | 1255 | 219 | 700 | 0 | 0 | 1308 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 18 | | 3 | 3 | | 18 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 0% | 4% | 6% | 0% | 0% | 4% | 1% |
| Turn Type | | | | Split | | Prot | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | 8 | 5 | 2 | | | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 30.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Effective Green, g (s) | | | | 31.0 | | 30.0 | 32.0 | 66.0 | | | 31.0 | |
| Actuated g/C Ratio | | | | 0.30 | | 0.29 | 0.30 | 0.63 | | | 0.30 | |
| Clearance Time (s) | | | | 5.0 | | 5.0 | 3.0 | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | | | 455 | | 437 | 468 | 2720 | | | 1261 | |
| v/s Ratio Prot | | | | 0.20 | | c0.82 | c0.14 | 0.16 | | | c0.31 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.67 | | 2.87 | 0.47 | 0.26 | | | 1.16dr | |
| Uniform Delay, d1 | | | | 32.6 | | 37.5 | 29.6 | 8.6 | | | 37.0 | |
| Progression Factor | | | | 1.00 | | 1.00 | 0.64 | 2.11 | | | 1.00 | |
| Incremental Delay, d2 | | | | 7.8 | | 848.6 | 2.8 | 0.2 | | | 35.5 | |
| Delay (s) | | | | 40.4 | | 886.1 | 21.8 | 18.4 | | | 72.5 | |
| Level of Service | | | | D | | F | C | B | | | E | |
| Approach Delay (s) | | 0.0 | | | 719.9 | | | 19.2 | | | 72.5 | |
| Approach LOS | | A | | | F | | | B | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 326.5 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 102.1% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| dr Defacto Right Lane. Recode with 1 though lane as a right lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1006: 99th Street & Halsted Street


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | | | | |  |  |  |  | |
| Volume (vph) | 322 | 770 | 146 | 0 | 0 | 0 | 0 | 579 | 410 | 359 | 734 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 13 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 8 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | | | | | | 0.91 | 0.88 | 1.00 | 0.91 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Flt Permitted | 0.95 | 1.00 | | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1509 | 3156 | | | | | | 4368 | 2244 | 1598 | 4680 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 332 | 794 | 151 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 299 | 964 | 0 | 0 | 0 | 0 | 0 | 597 | 423 | 370 | 757 | 0 |
| Confl. Peds. (#/hr) | 6 | | 1 | 1 | | 6 | 6 | | | | | 6 |
| Heavy Vehicles (%) | 6% | 1% | 0% | 0% | 0% | 0% | 0% | 5% | 4% | 7% | 5% | 0% |
| Turn Type | Perm | | | | | | | | | Perm | Prot | |
| Protected Phases | 4 | | | | | | 2 | | | 1 | 6 | |
| Permitted Phases | 4 | | | | | | | | | 2 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Effective Green, g (s) | 34.0 | 34.0 | | | | | | 28.0 | 28.0 | 31.0 | 62.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | | | | 0.27 | 0.27 | 0.30 | 0.59 | |
| Clearance Time (s) | 5.0 | 5.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 489 | 1022 | | | | | | 1165 | 598 | 472 | 2763 | |
| v/s Ratio Prot | | | | | | | 0.14 | | | c0.23 | | 0.16 |
| v/s Ratio Perm | 0.20 | 0.31 | | | | | | c0.19 | | | | |
| v/c Ratio | 0.61 | 0.94 | | | | | | 0.51 | 0.71 | 0.78 | 0.27 | |
| Uniform Delay, d1 | 29.9 | 34.6 | | | | | | 32.7 | 34.8 | 33.9 | 10.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.17 | 1.17 | 0.86 | 0.22 | |
| Incremental Delay, d2 | 5.6 | 17.5 | | | | | | 1.4 | 5.9 | 4.8 | 0.1 | |
| Delay (s) | 35.5 | 52.0 | | | | | | 39.7 | 46.6 | 34.1 | 2.4 | |
| Level of Service | D | D | | | | | | D | D | C | A | |
| Approach Delay (s) | 48.2 | | 0.0 | | | 42.5 | | | 12.8 | | | |
| Approach LOS | D | | A | | | D | | | B | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.9 | HCM Level of Service | | | | C | | | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | Sum of lost time (s) | | | | 12.0 | | | | |
| Intersection Capacity Utilization | | | 102.1% | ICU Level of Service | | | | G | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1007: 98th Place & Wentworth Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | | |  |  | |  |  | | |  | | |
| Volume (vph) | 0 | 0 | 0 | 290 | 25 | 24 | 11 | 164 | 0 | 0 | 149 | 5 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | | 4.0 | 4.0 | | | -3.0 | | |
| Lane Util. Factor | | | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | | |
| Frpb, ped/bikes | | | | 1.00 | 0.99 | | 1.00 | 1.00 | | | 1.00 | | |
| Flpb, ped/bikes | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | |
| Frt | | | | 1.00 | 0.93 | | 1.00 | 1.00 | | | 1.00 | | |
| Flt Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1688 | 3132 | | 1710 | 1846 | | | 1955 | | |
| Flt Permitted | | | | 0.95 | 1.00 | | 0.54 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1688 | 3132 | | 974 | 1846 | | | 1955 | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 322 | 28 | 27 | 12 | 182 | 0 | 0 | 166 | 6 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 322 | 37 | 0 | 12 | 182 | 0 | 0 | 171 | 0 | |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | | | 6 | 6 | | | |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 4% | 0% | 0% | 4% | 0% | |
| Turn Type | | | | Perm | | | pm+pt | | | | | | |
| Protected Phases | | | | 8 | | | 7 | | | 2 | | | 6 |
| Permitted Phases | | | | 8 | | | 2 | | | | | | |
| Actuated Green, G (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 40.0 |
| Effective Green, g (s) | | | | 27.0 | | | 27.0 | | | 50.0 | | | 46.0 |
| Actuated g/C Ratio | | | | 0.32 | | | 0.32 | | | 0.59 | | | 0.54 |
| Clearance Time (s) | | | | 4.0 | | | 4.0 | | | 4.0 | | | 3.0 |
| Lane Grp Cap (vph) | | | | 536 | | | 995 | | | 634 | | | 1058 |
| v/s Ratio Prot | | | | | | | 0.01 | | | 0.00 | | | 0.09 |
| v/s Ratio Perm | | | | c0.19 | | | | | | 0.01 | | | |
| v/c Ratio | | | | 0.60 | | | 0.04 | | | 0.02 | | | 0.16 |
| Uniform Delay, d1 | | | | 24.5 | | | 20.0 | | | 10.5 | | | 9.8 |
| Progression Factor | | | | 1.00 | | | 1.00 | | | 1.04 | | | 1.00 |
| Incremental Delay, d2 | | | | 4.9 | | | 0.1 | | | 0.1 | | | 0.3 |
| Delay (s) | | | | 29.4 | | | 20.1 | | | 11.0 | | | 10.1 |
| Level of Service | | | | C | | | C | | | B | | | B |
| Approach Delay (s) | 0.0 | | | | | | 28.0 | | | 9.8 | | | 10.1 |
| Approach LOS | A | | | | | | C | | | A | | | B |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | | 0.32 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | | 37.0% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1008: 99th Street & Wentworth Avenue

1/14/2013

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|------|------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 12 | 11 | 23 | 5 | 0 | 14 | 0 | 149 | 45 | 46 | 393 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 16 | 15 | 12 | 8 | 12 | 8 | 12 | 12 | 12 | 10 | 13 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | | 0.98 | | | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | | 0.90 | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1935 | 1735 | | | 1565 | | | 1718 | | 1590 | 1860 | |
| Flt Permitted | 0.74 | 1.00 | | | 0.97 | | | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 1516 | 1735 | | | 1531 | | | 1718 | | 987 | 1860 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 13 | 12 | 24 | 5 | 0 | 15 | 0 | 157 | 47 | 48 | 414 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 20 | 0 | 0 | 10 | 0 | 0 | 191 | 0 | 48 | 414 | 0 |
| Confl. Peds. (#/hr) | 1 | | 11 | 11 | | 1 | 1 | | 10 | 10 | | 1 |
| Confl. Bikes (#/hr) | | | 2 | 2 | | | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | | | | pm+pt | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | | 40.0 | | 50.0 | 50.0 | |
| Actuated g/C Ratio | 0.32 | 0.32 | | | 0.32 | | | 0.47 | | 0.59 | 0.59 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | | 3.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 482 | 551 | | | 486 | | | 808 | | 630 | 1094 | |
| v/s Ratio Prot | | c0.01 | | | | | | 0.11 | | 0.01 | c0.22 | |
| v/s Ratio Perm | 0.01 | | | | 0.01 | | | | | 0.04 | | |
| v/c Ratio | 0.03 | 0.04 | | | 0.02 | | | 0.24 | | 0.08 | 0.38 | |
| Uniform Delay, d1 | 20.0 | 20.0 | | | 19.9 | | | 13.4 | | 8.8 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | 0.98 | 0.87 | |
| Incremental Delay, d2 | 0.1 | 0.1 | | | 0.1 | | | 0.7 | | 0.2 | 0.9 | |
| Delay (s) | 20.1 | 20.1 | | | 20.0 | | | 14.1 | | 8.8 | 9.0 | |
| Level of Service | C | C | | | B | | | B | | A | A | |
| Approach Delay (s) | | 20.1 | | | 20.0 | | | 14.1 | | | 9.0 | |
| Approach LOS | | C | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.4 | | | | | | | | | |
| HCM Volume to Capacity ratio | | | 0.26 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 41.8% | | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1009: 99th Street & State Street

1/14/2013




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | W | | W | ↑ | ↑ | W |
| Volume (vph) | 48 | 42 | 12 | 193 | 288 | 28 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 14 | 12 | 13 | 12 | 10 | 12 |
| Total Lost time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Frt | 0.94 | | 1.00 | 1.00 | 0.99 | |
| Flt Protected | 0.97 | | 0.95 | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1752 | | 1765 | 1782 | 1657 | |
| Flt Permitted | 0.97 | | 0.50 | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1752 | | 937 | 1782 | 1657 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 53 | 47 | 13 | 214 | 320 | 31 |
| RTOR Reduction (vph) | 32 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 68 | 0 | 13 | 214 | 346 | 0 |
| Confl. Peds. (#/hr) | | | 2 | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | | | | | |
| Protected Phases | 4 | | | 2 | 6 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Effective Green, g (s) | 21.0 | | 36.0 | 36.0 | 36.0 | |
| Actuated g/C Ratio | 0.32 | | 0.55 | 0.55 | 0.55 | |
| Clearance Time (s) | 4.0 | | 4.0 | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 566 | | 519 | 987 | 918 | |
| v/s Ratio Prot | c0.04 | | | 0.12 | c0.21 | |
| v/s Ratio Perm | | | 0.01 | | | |
| v/c Ratio | 0.12 | | 0.03 | 0.22 | 0.38 | |
| Uniform Delay, d1 | 15.5 | | 6.6 | 7.4 | 8.2 | |
| Progression Factor | 1.00 | | 0.51 | 0.61 | 1.43 | |
| Incremental Delay, d2 | 0.4 | | 0.1 | 0.5 | 1.0 | |
| Delay (s) | 15.9 | | 3.4 | 5.0 | 12.7 | |
| Level of Service | B | | A | A | B | |
| Approach Delay (s) | 15.9 | | | 4.9 | 12.7 | |
| Approach LOS | B | | | A | B | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 10.6 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.28 | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 30.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1010: 99th St & Michigan Avenue


















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | | |  |  |
| Volume (vph) | 0 | 0 | 0 | 31 | 268 | 9 | 258 | 132 | 0 | 0 | 283 | 17 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 14 | 16 | 12 | 12 | 15 | 12 | 12 | 13 | 10 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | | | | 0.95 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | | | | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 3772 | | 1693 | 1678 | | | 1738 | 1428 |
| Flt Permitted | | | | | 1.00 | | 0.47 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 3772 | | 844 | 1678 | | | 1738 | 1428 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 34 | 298 | 10 | 287 | 147 | 0 | 0 | 314 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 339 | 0 | 287 | 147 | 0 | 0 | 314 | 8 |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | | | 5 | 5 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 1% | 18% | 0% | 0% | 7% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | | | Perm |
| Protected Phases | | | | 8 | 8 | | 7 | 2 | | | 6 | |
| Permitted Phases | | | | | | | 2 | | | | | 6 |
| Actuated Green, G (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Effective Green, g (s) | | | | | 26.0 | | 51.0 | 51.0 | | | 38.0 | 38.0 |
| Actuated g/C Ratio | | | | | 0.31 | | 0.60 | 0.60 | | | 0.45 | 0.45 |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | | | | 1154 | | 606 | 1007 | | | 777 | 638 |
| v/s Ratio Prot | | | | | c0.09 | | c0.06 | 0.09 | | | 0.18 | |
| v/s Ratio Perm | | | | | | | c0.23 | | | | | 0.01 |
| v/c Ratio | | | | | 0.29 | | 0.47 | 0.15 | | | 0.40 | 0.01 |
| Uniform Delay, d1 | | | | | 22.5 | | 13.7 | 7.5 | | | 15.9 | 13.1 |
| Progression Factor | | | | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | | | | 0.6 | | 2.6 | 0.3 | | | 1.6 | 0.0 |
| Delay (s) | | | | | 23.1 | | 16.4 | 7.8 | | | 17.4 | 13.1 |
| Level of Service | | | | | C | | B | A | | | B | B |
| Approach Delay (s) | | 0.0 | | | 23.1 | | | 13.5 | | | 17.2 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 17.6 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | | 54.1% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1011: 99th Street & Martin Luther King Jr Drive

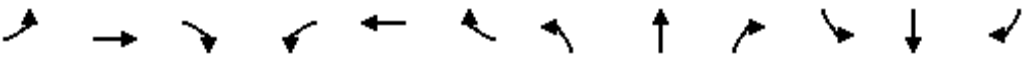
1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | | |  | |  |  | |  |  | |
| Volume (vph) | 0 | 0 | 0 | 95 | 94 | 38 | 133 | 205 | 30 | 59 | 703 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 12 | 12 | 13 | 12 |
| Total Lost time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | | | | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | | | | 1896 | | 1710 | 3287 | | 1707 | 3467 | |
| Flt Permitted | | | | | 0.98 | | 0.25 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | | | | | 1896 | | 446 | 3287 | | 1061 | 3467 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 0 | 0 | 106 | 104 | 42 | 148 | 228 | 33 | 66 | 781 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 242 | 0 | 148 | 246 | 0 | 66 | 824 | 0 |
| Confl. Peds. (#/hr) | | | | | | | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | | | | Split | | | pm+pt | | | pm+pt | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Effective Green, g (s) | | | | | 23.0 | | 41.0 | 34.0 | | 41.0 | 34.0 | |
| Actuated g/C Ratio | | | | | 0.31 | | 0.55 | 0.45 | | 0.55 | 0.45 | |
| Clearance Time (s) | | | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | | | | | 581 | | 362 | 1490 | | 640 | 1572 | |
| v/s Ratio Prot | | | | | c0.13 | | c0.04 | 0.07 | | 0.01 | c0.24 | |
| v/s Ratio Perm | | | | | | | 0.19 | | | 0.05 | | |
| v/c Ratio | | | | | 0.42 | | 0.41 | 0.16 | | 0.10 | 0.52 | |
| Uniform Delay, d1 | | | | | 20.7 | | 16.4 | 12.1 | | 8.2 | 14.7 | |
| Progression Factor | | | | | 1.00 | | 0.84 | 0.82 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | | | | 2.2 | | 3.4 | 0.2 | | 0.3 | 1.3 | |
| Delay (s) | | | | | 22.9 | | 17.1 | 10.2 | | 8.5 | 16.0 | |
| Level of Service | | | | | C | | B | B | | A | B | |
| Approach Delay (s) | | 0.0 | | | 22.9 | | | 12.7 | | | 15.4 | |
| Approach LOS | | A | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.47 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 53.0% | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1012: 100th Street & Martin Luther King Jr Drive

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↕ | | ↙ | ↕ | |
| Volume (vph) | 32 | 49 | 13 | 9 | 63 | 63 | 7 | 273 | 24 | 159 | 589 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 16 | 12 | 12 | 10 | 11 | 12 | 12 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.98 | | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | | 0.98 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1964 | | | 1655 | | 1595 | 3172 | | 1704 | 3231 | |
| Flt Permitted | | 0.89 | | | 0.99 | | 0.36 | 1.00 | | 0.56 | 1.00 | |
| Satd. Flow (perm) | | 1775 | | | 1637 | | 600 | 3172 | | 1008 | 3231 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 34 | 52 | 14 | 9 | 66 | 66 | 7 | 287 | 25 | 167 | 620 | 53 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 42 | 0 | 0 | 9 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 92 | 0 | 0 | 99 | 0 | 7 | 303 | 0 | 167 | 665 | 0 |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 1 | | 6 | 6 | | 1 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Effective Green, g (s) | | 25.0 | | | 25.0 | | 42.0 | 42.0 | | 42.0 | 42.0 | |
| Actuated g/C Ratio | | 0.33 | | | 0.33 | | 0.56 | 0.56 | | 0.56 | 0.56 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 592 | | | 546 | | 336 | 1776 | | 564 | 1809 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | | c0.21 | |
| v/s Ratio Perm | | 0.05 | | | c0.06 | | 0.01 | | | 0.17 | | |
| v/c Ratio | | 0.16 | | | 0.18 | | 0.02 | 0.17 | | 0.30 | 0.37 | |
| Uniform Delay, d1 | | 17.6 | | | 17.7 | | 7.3 | 8.0 | | 8.7 | 9.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.27 | 0.25 | |
| Incremental Delay, d2 | | 0.6 | | | 0.7 | | 0.1 | 0.2 | | 1.2 | 0.5 | |
| Delay (s) | | 18.1 | | | 18.5 | | 7.5 | 8.2 | | 3.5 | 2.8 | |
| Level of Service | | B | | | B | | A | A | | A | A | |
| Approach Delay (s) | | 18.1 | | | 18.5 | | | 8.2 | | | 2.9 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 6.8 | | | HCM Level of Service | | | A | | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 48.4% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1013: 100th Street & Cottage Grove Avenue

1/14/2013
























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------|------|-------|----------------------|-------|------|
| Lane Configurations | W | | | ↑↑ | ↑↑ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 37 | 192 | 67 | 251 | 588 | 81 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 41 | 213 | 74 | 279 | 653 | 90 |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total (vph) | 254 | 167 | 186 | 436 | 308 | |
| Volume Left (vph) | 41 | 74 | 0 | 0 | 0 | |
| Volume Right (vph) | 213 | 0 | 0 | 0 | 90 | |
| Hadj (s) | -0.42 | 0.27 | 0.05 | 0.05 | -0.15 | |
| Departure Headway (s) | 5.7 | 6.6 | 6.3 | 5.9 | 5.7 | |
| Degree Utilization, x | 0.41 | 0.30 | 0.33 | 0.71 | 0.48 | |
| Capacity (veh/h) | 592 | 528 | 546 | 602 | 622 | |
| Control Delay (s) | 12.6 | 11.2 | 11.2 | 20.8 | 12.7 | |
| Approach Delay (s) | 12.6 | 11.2 | | 17.4 | | |
| Approach LOS | B | B | | C | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 53.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL2 | EBL | EBT | EBR | WBL | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR |
| Lane Configurations | |  |  |  |  |  |  | | |  |  |  |
| Volume (vph) | 32 | 35 | 378 | 18 | 24 | 414 | 78 | 82 | 55 | 68 | 354 | 32 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.92 | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | | 1.00 | 0.99 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1612 | 1731 | 1530 | 1710 | 1731 | 1412 | | | 1710 | 3251 | |
| Flt Permitted | | 0.13 | 1.00 | 1.00 | 0.45 | 1.00 | 1.00 | | | 0.16 | 1.00 | |
| Satd. Flow (perm) | | 215 | 1731 | 1530 | 812 | 1731 | 1412 | | | 280 | 3251 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 36 | 39 | 420 | 20 | 27 | 460 | 87 | 91 | 61 | 76 | 393 | 36 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 13 | 0 | 0 | 29 | 0 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 420 | 7 | 27 | 460 | 149 | 0 | 0 | 137 | 424 | 0 |
| Confl. Peds. (#/hr) | | 25 | | | | | 25 | | | | | 3 |
| Heavy Vehicles (%) | 6% | 6% | 4% | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | pm+pt | | Perm | Perm | | Perm | | Perm | Perm | | |
| Protected Phases | | 7 | 4 | | | 8 | | | | | 2 | |
| Permitted Phases | 4 | 4 | | 4 | 8 | | 8 | | 2 | 2 | | |
| Actuated Green, G (s) | | 46.0 | 46.0 | 46.0 | 28.0 | 28.0 | 28.0 | | | 44.0 | 44.0 | |
| Effective Green, g (s) | | 46.0 | 46.0 | 46.0 | 28.0 | 28.0 | 28.0 | | | 44.0 | 44.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | 0.35 | 0.22 | 0.22 | 0.22 | | | 0.34 | 0.34 | |
| Clearance Time (s) | | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | | 232 | 613 | 541 | 175 | 373 | 304 | | | 95 | 1100 | |
| v/s Ratio Prot | | 0.04 | c0.24 | | | c0.27 | | | | | 0.13 | |
| v/s Ratio Perm | | 0.08 | | 0.00 | 0.03 | | 0.11 | | | c0.49 | | |
| v/c Ratio | | 0.32 | 0.69 | 0.01 | 0.15 | 1.23 | 0.49 | | | 1.44 | 0.39 | |
| Uniform Delay, d1 | | 31.5 | 35.8 | 27.3 | 41.4 | 51.0 | 44.7 | | | 43.0 | 32.7 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 0.89 | 0.90 | 0.86 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 3.7 | 6.1 | 0.0 | 1.7 | 124.1 | 4.9 | | | 248.4 | 1.0 | |
| Delay (s) | | 35.2 | 41.9 | 27.3 | 38.4 | 169.9 | 43.2 | | | 291.4 | 33.7 | |
| Level of Service | | D | D | C | D | F | D | | | F | C | |
| Approach Delay (s) | | | 40.4 | | | 130.6 | | | | | 96.1 | |
| Approach LOS | | | D | | | F | | | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 131.5 | | | HCM Level of Service | | | | F | | |
| HCM Volume to Capacity ratio | | | 1.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 16.5 | | | |
| Intersection Capacity Utilization | | | 104.2% | | | ICU Level of Service | | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1014: 103rd Street & Vincennes Avenue

1/14/2013


















| Movement | SBL | SBT | SBR | SBR2 | SEL2 | SEL | SER | SER2 |
|------------------------|------|------|------|------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 107 | 571 | 82 | 103 | 4 | 114 | 607 | 197 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | | | 1.00 | 0.88 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.96 | | | | 1.00 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1706 | 3246 | | | | 1710 | 2633 | |
| Flt Permitted | 0.41 | 1.00 | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 729 | 3246 | | | | 1710 | 2633 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 119 | 634 | 91 | 114 | 4 | 127 | 674 | 219 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 119 | 830 | 0 | 0 | 0 | 131 | 872 | 0 |
| Confl. Peds. (#/hr) | 3 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Perm | | | | Split | | Perm | |
| Protected Phases | | 6 | | | 9 | 9 | | |
| Permitted Phases | 6 | | | | | | 9 | |
| Actuated Green, G (s) | 43.5 | 43.5 | | | | 27.5 | 27.5 | |
| Effective Green, g (s) | 43.5 | 43.5 | | | | 27.5 | 27.5 | |
| Actuated g/C Ratio | 0.33 | 0.33 | | | | 0.21 | 0.21 | |
| Clearance Time (s) | 4.5 | 4.5 | | | | 4.5 | 4.5 | |
| Lane Grp Cap (vph) | 244 | 1086 | | | | 362 | 557 | |
| v/s Ratio Prot | | 0.26 | | | | 0.08 | | |
| v/s Ratio Perm | 0.16 | | | | | | c0.33 | |
| v/c Ratio | 0.49 | 0.76 | | | | 0.36 | 1.57 | |
| Uniform Delay, d1 | 34.4 | 38.7 | | | | 43.8 | 51.2 | |
| Progression Factor | 1.00 | 1.00 | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.8 | 5.1 | | | | 2.8 | 262.9 | |
| Delay (s) | 41.2 | 43.8 | | | | 46.6 | 314.2 | |
| Level of Service | D | D | | | | D | F | |
| Approach Delay (s) | | 43.5 | | | | 279.9 | | |
| Approach LOS | | D | | | | F | | |
| Intersection Summary | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1015: 103rd Street & Morgan Street























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 65 | 602 | 0 | 0 | 506 | 50 | 85 | 52 | 18 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 11 | 11 | 16 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.99 | | | 0.98 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 1681 | | | 1956 | | | 1842 | | | | |
| Flt Permitted | | 0.90 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | | 1523 | | | 1956 | | | 1842 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 72 | 669 | 0 | 0 | 562 | 56 | 94 | 58 | 20 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 741 | 0 | 0 | 618 | 0 | 0 | 172 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 937 | | | 1204 | | | 482 | | | | |
| v/s Ratio Prot | | | | | 0.32 | | | | | | | |
| v/s Ratio Perm | | 0.49 | | | | | | 0.09 | | | | |
| v/c Ratio | | 0.79 | | | 0.51 | | | 0.36 | | | | |
| Uniform Delay, d1 | | 9.4 | | | 7.0 | | | 19.5 | | | | |
| Progression Factor | | 0.99 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 5.8 | | | 1.6 | | | 2.1 | | | | |
| Delay (s) | | 15.1 | | | 8.6 | | | 21.6 | | | | |
| Level of Service | | B | | | A | | | C | | | | |
| Approach Delay (s) | | 15.1 | | | 8.6 | | | 21.6 | | | 0.0 | |
| Approach LOS | | B | | | A | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.2 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.66 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 87.6% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1016: 103rd Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (vph) | 71 | 427 | 162 | 117 | 335 | 125 | 106 | 639 | 84 | 137 | 759 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.93 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1985 | 1443 | | 1953 | 1457 | 1547 | 3040 | 1285 | 1506 | 3069 | 1237 |
| Flt Permitted | | 0.69 | 1.00 | | 0.66 | 1.00 | 0.17 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1373 | 1443 | | 1299 | 1457 | 282 | 3040 | 1285 | 357 | 3069 | 1237 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 75 | 449 | 171 | 123 | 353 | 132 | 112 | 673 | 88 | 144 | 799 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 83 | 0 | 0 | 74 | 0 | 0 | 53 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 0 | 524 | 88 | 0 | 476 | 58 | 112 | 673 | 35 | 144 | 799 | 49 |
| Confl. Peds. (#/hr) | 24 | | 45 | 45 | | 24 | 36 | | 24 | 24 | | 36 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 3% | 2% | 3% | 5% | 1% | 2% | 4% | 3% |
| Turn Type | pm+pt | | Perm | Perm | | Perm | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 54.0 | 54.0 | | 46.0 | 46.0 | 39.0 | 33.0 | 33.0 | 41.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 54.0 | 54.0 | | 46.0 | 46.0 | 39.0 | 33.0 | 33.0 | 41.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.51 | 0.51 | | 0.44 | 0.44 | 0.37 | 0.31 | 0.31 | 0.39 | 0.32 | 0.32 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 735 | 742 | | 569 | 638 | 177 | 955 | 404 | 216 | 994 | 401 |
| v/s Ratio Prot | | c0.03 | | | | | 0.04 | 0.22 | | c0.04 | c0.26 | |
| v/s Ratio Perm | | 0.33 | 0.06 | | c0.37 | 0.04 | 0.20 | | 0.03 | 0.22 | | 0.04 |
| v/c Ratio | | 0.71 | 0.12 | | 0.84 | 0.09 | 0.63 | 0.70 | 0.09 | 0.67 | 0.80 | 0.12 |
| Uniform Delay, d1 | | 19.6 | 13.2 | | 26.2 | 17.3 | 24.0 | 31.7 | 25.4 | 22.9 | 32.5 | 25.0 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.50 | 1.34 | 2.07 |
| Incremental Delay, d2 | | 5.8 | 0.3 | | 13.7 | 0.3 | 7.2 | 4.4 | 0.4 | 7.3 | 6.6 | 0.6 |
| Delay (s) | | 25.4 | 13.5 | | 39.8 | 17.5 | 31.2 | 36.1 | 25.8 | 41.6 | 50.1 | 52.3 |
| Level of Service | | C | B | | D | B | C | D | C | D | D | D |
| Approach Delay (s) | | 22.5 | | | 35.0 | | | 34.4 | | | 49.1 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 36.7 | | HCM Level of Service | | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.82 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 105.0 | | Sum of lost time (s) | | | | | 14.0 | | |
| Intersection Capacity Utilization | | | 95.0% | | ICU Level of Service | | | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
















Halsted Rail Alternative Mitigated (2030) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1017: 103rd Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 85 | 486 | 99 | 94 | 468 | 94 | 55 | 61 | 69 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1645 | | | 1645 | | | 1799 | | | | |
| Flt Permitted | | 0.85 | | | 0.83 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1411 | | | 1381 | | | 1799 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 94 | 540 | 110 | 104 | 520 | 104 | 61 | 68 | 77 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 9 | 0 | 0 | 33 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 734 | 0 | 0 | 719 | 0 | 0 | 173 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Effective Green, g (s) | | 40.0 | | | 40.0 | | | 17.0 | | | | |
| Actuated g/C Ratio | | 0.62 | | | 0.62 | | | 0.26 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 868 | | | 850 | | | 471 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.52 | | | 0.52 | | | 0.10 | | | | |
| v/c Ratio | | 0.85 | | | 0.85 | | | 0.37 | | | | |
| Uniform Delay, d1 | | 10.0 | | | 10.0 | | | 19.6 | | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 10.0 | | | 10.1 | | | 2.2 | | | | |
| Delay (s) | | 20.0 | | | 20.1 | | | 21.8 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 20.0 | | | 20.1 | | | 21.8 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 20.3 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.70 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 69.7% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1018: 103rd Street & Wentworth Avenue

1/14/2013














| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|--------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↗ | ↘ | | ↗ | ↘ | | ↗ | ↘ | | ↕ | |
| Volume (vph) | 53 | 485 | 82 | 76 | 525 | 37 | 39 | 76 | 72 | 54 | 238 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | |
| Satd. Flow (prot) | | 1685 | 1382 | | 1713 | 1417 | | 1685 | 1455 | | 1879 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.85 | 1.00 | | 0.82 | 1.00 | | 0.94 | |
| Satd. Flow (perm) | | 1505 | 1382 | | 1459 | 1417 | | 1404 | 1455 | | 1774 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 56 | 511 | 86 | 80 | 553 | 39 | 41 | 80 | 76 | 57 | 251 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 12 | 0 | 0 | 52 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 567 | 49 | 0 | 633 | 27 | 0 | 121 | 24 | 0 | 357 | 0 |
| Confl. Peds. (#/hr) | 25 | | 19 | 19 | | 25 | 36 | | 30 | 30 | | 36 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 0% | 1% | 0% | 0% | 1% | 1% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Effective Green, g (s) | | 43.0 | 43.0 | | 43.0 | 43.0 | | 24.0 | 24.0 | | 24.0 | |
| Actuated g/C Ratio | | 0.57 | 0.57 | | 0.57 | 0.57 | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lane Grp Cap (vph) | | 863 | 792 | | 836 | 812 | | 449 | 466 | | 568 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.38 | 0.04 | | c0.43 | 0.02 | | 0.09 | 0.02 | | c0.20 | |
| v/c Ratio | | 0.66 | 0.06 | | 0.76 | 0.03 | | 0.27 | 0.05 | | 0.63 | |
| Uniform Delay, d1 | | 11.0 | 7.1 | | 12.1 | 7.0 | | 19.0 | 17.6 | | 21.7 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 3.9 | 0.2 | | 6.3 | 0.1 | | 1.5 | 0.2 | | 5.2 | |
| Delay (s) | | 14.8 | 7.2 | | 18.4 | 7.0 | | 20.4 | 17.8 | | 26.9 | |
| Level of Service | | B | A | | B | A | | C | B | | C | |
| Approach Delay (s) | | 13.8 | | | 17.7 | | | 19.4 | | | 26.9 | |
| Approach LOS | | B | | | B | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.4 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.71 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 100.7% | | | ICU Level of Service | | | G | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1019: 103rd Street & State Street





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 59 | 483 | 34 | 45 | 537 | 54 | 45 | 165 | 55 | 123 | 210 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 11 | 16 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1533 | 3066 | | 1652 | 3730 | | 1585 | 1663 | 1370 | 1568 | 1680 | 1397 |
| Flt Permitted | 0.35 | 1.00 | | 0.40 | 1.00 | | 0.57 | 1.00 | 1.00 | 0.63 | 1.00 | 1.00 |
| Satd. Flow (perm) | 563 | 3066 | | 687 | 3730 | | 953 | 1663 | 1370 | 1043 | 1680 | 1397 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 66 | 537 | 38 | 50 | 597 | 60 | 50 | 183 | 61 | 137 | 233 | 37 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 37 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 66 | 567 | 0 | 50 | 645 | 0 | 50 | 183 | 24 | 137 | 233 | 15 |
| Confl. Peds. (#/hr) | 51 | | 3 | 3 | | 51 | 13 | | 13 | 13 | | 13 |
| Heavy Vehicles (%) | 2% | 3% | 3% | 0% | 2% | 0% | 0% | 1% | 2% | 1% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 269 | 1462 | | 328 | 1779 | | 381 | 665 | 548 | 417 | 672 | 559 |
| v/s Ratio Prot | | c0.19 | | | 0.17 | | | 0.11 | | | c0.14 | |
| v/s Ratio Perm | 0.12 | | | 0.07 | | | 0.05 | | 0.02 | 0.13 | | 0.01 |
| v/c Ratio | 0.25 | 0.39 | | 0.15 | 0.36 | | 0.13 | 0.28 | 0.04 | 0.33 | 0.35 | 0.03 |
| Uniform Delay, d1 | 10.1 | 10.9 | | 9.6 | 10.8 | | 12.3 | 13.1 | 11.9 | 13.5 | 13.6 | 11.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.83 | 0.89 | 0.73 | 0.59 | 0.59 | 0.26 |
| Incremental Delay, d2 | 2.2 | 0.8 | | 1.0 | 0.6 | | 0.7 | 1.0 | 0.2 | 2.0 | 1.4 | 0.1 |
| Delay (s) | 12.2 | 11.7 | | 10.6 | 11.3 | | 11.0 | 12.7 | 8.8 | 9.9 | 9.4 | 3.1 |
| Level of Service | B | B | | B | B | | B | B | A | A | A | A |
| Approach Delay (s) | | 11.7 | | | 11.3 | | | 11.6 | | | 9.0 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.0 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 55.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1020: 103rd Street & Michigan Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 60 | 409 | 81 | 73 | 394 | 67 | 57 | 180 | 64 | 89 | 245 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 | 10 | 11 | 11 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.96 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1329 | 3134 | | 1519 | 3128 | | 1580 | 2919 | | 1452 | 2997 | |
| Flt Permitted | 0.44 | 1.00 | | 0.42 | 1.00 | | 0.53 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 619 | 3134 | | 678 | 3128 | | 882 | 2919 | | 907 | 2997 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 63 | 431 | 85 | 77 | 415 | 71 | 60 | 189 | 67 | 94 | 258 | 84 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 42 | 0 |
| Lane Group Flow (vph) | 63 | 516 | 0 | 77 | 486 | 0 | 60 | 217 | 0 | 94 | 300 | 0 |
| Confl. Peds. (#/hr) | 112 | | 99 | 99 | | 112 | 23 | | 53 | 53 | | 23 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 16% | 1% | 0% | 0% | 1% | 9% | 0% | 8% | 2% | 5% | 5% | 7% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Effective Green, g (s) | 36.0 | 36.0 | | 36.0 | 36.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | 0.41 | 0.41 | | 0.41 | 0.41 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 297 | 1504 | | 325 | 1501 | | 365 | 1207 | | 375 | 1239 | |
| v/s Ratio Prot | c0.16 | | | 0.16 | | | 0.07 | | | 0.10 | | |
| v/s Ratio Perm | 0.10 | | | 0.11 | | | 0.07 | | | c0.10 | | |
| v/c Ratio | 0.21 | 0.34 | | 0.24 | 0.32 | | 0.16 | 0.18 | | 0.25 | 0.24 | |
| Uniform Delay, d1 | 11.3 | 12.1 | | 11.4 | 12.0 | | 13.8 | 13.9 | | 14.4 | 14.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.6 | | 1.7 | 0.6 | | 1.0 | 0.3 | | 1.6 | 0.5 | |
| Delay (s) | 12.9 | 12.8 | | 13.2 | 12.6 | | 14.8 | 14.3 | | 16.0 | 14.8 | |
| Level of Service | B | B | | B | B | | B | B | | B | B | |
| Approach Delay (s) | 12.8 | | | 12.7 | | | 14.4 | | | 15.1 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 13.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.30 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.8% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1021: 103rd Street & Martin Luther King Jr Drive



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 96 | 439 | 62 | 32 | 522 | 48 | 86 | 203 | 60 | 76 | 473 | 109 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 8 | 16 | 12 | 9 | 10 | 10 | 9 | 10 | 10 |
| Total Lost time (s) | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1595 | 1652 | | 1370 | 1973 | | 1534 | 2998 | | 1535 | 3013 | |
| Flt Permitted | 0.24 | 1.00 | | 0.31 | 1.00 | | 0.28 | 1.00 | | 0.58 | 1.00 | |
| Satd. Flow (perm) | 405 | 1652 | | 447 | 1973 | | 453 | 2998 | | 939 | 3013 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 101 | 462 | 65 | 34 | 549 | 51 | 91 | 214 | 63 | 80 | 498 | 115 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 101 | 527 | 0 | 34 | 600 | 0 | 91 | 277 | 0 | 80 | 613 | 0 |
| Confl. Peds. (#/hr) | 21 | | 95 | 95 | | 21 | 36 | | 8 | 8 | | 36 |
| Confl. Bikes (#/hr) | 2 | | 3 | 3 | | 2 | 2 | | | | | 2 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 7% | 2% | 0% | 0% | 3% | 0% | 0% | 2% | 1% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 43.9 | 39.3 | | 40.7 | 37.7 | | 26.7 | 21.8 | | 26.7 | 21.8 | |
| Effective Green, g (s) | 43.9 | 37.3 | | 40.7 | 35.7 | | 26.7 | 19.8 | | 26.7 | 19.8 | |
| Actuated g/C Ratio | 0.52 | 0.44 | | 0.48 | 0.42 | | 0.31 | 0.23 | | 0.31 | 0.23 | |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 274 | 725 | | 247 | 829 | | 205 | 698 | | 329 | 702 | |
| v/s Ratio Prot | c0.02 | c0.32 | | 0.00 | 0.30 | | c0.03 | 0.09 | | 0.01 | c0.20 | |
| v/s Ratio Perm | 0.17 | | | 0.06 | | | 0.11 | | | 0.06 | | |
| v/c Ratio | 0.37 | 0.73 | | 0.14 | 0.72 | | 0.44 | 0.40 | | 0.24 | 0.87 | |
| Uniform Delay, d1 | 23.5 | 19.7 | | 20.2 | 20.5 | | 29.2 | 27.6 | | 21.9 | 31.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 6.3 | | 0.3 | 5.5 | | 1.5 | 1.7 | | 0.4 | 14.2 | |
| Delay (s) | 24.4 | 25.9 | | 20.4 | 26.0 | | 30.7 | 29.2 | | 22.2 | 45.5 | |
| Level of Service | C | C | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 25.7 | | | 25.7 | | | 29.6 | | | 42.9 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 17.0 | | | |
| Intersection Capacity Utilization | | | 79.3% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1022: 103rd Street & Cottage Grove Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | |  |  | |  |  | |
| Volume (vph) | 75 | 393 | 65 | 117 | 509 | 118 | 67 | 158 | 58 | 127 | 367 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 11 | 11 | 11 | 11 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.98 | | | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3681 | | | 3131 | | 1652 | 3237 | | 1549 | 3027 | |
| Flt Permitted | | 0.71 | | | 0.72 | | 0.42 | 1.00 | | 0.60 | 1.00 | |
| Satd. Flow (perm) | | 2643 | | | 2282 | | 737 | 3237 | | 983 | 3027 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 83 | 437 | 72 | 130 | 566 | 131 | 74 | 176 | 64 | 141 | 408 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 592 | 0 | 0 | 827 | 0 | 74 | 240 | 0 | 141 | 499 | 0 |
| Confl. Peds. (#/hr) | 23 | | 30 | 30 | | 23 | 1 | | 20 | 20 | | 1 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 2% | 2% | 0% | 0% | 1% | 0% | 2% | 2% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | 32.0 | 32.0 | | 32.0 | 32.0 | |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Actuated g/C Ratio | | 0.45 | | | 0.45 | | 0.44 | 0.44 | | 0.44 | 0.44 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 1198 | | | 1035 | | 324 | 1424 | | 433 | 1332 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | | c0.16 | |
| v/s Ratio Perm | | 0.22 | | | c0.36 | | 0.10 | | | 0.14 | | |
| v/c Ratio | | 0.49 | | | 0.80 | | 0.23 | 0.17 | | 0.33 | 0.37 | |
| Uniform Delay, d1 | | 14.4 | | | 17.6 | | 13.1 | 12.7 | | 13.7 | 14.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 6.5 | | 1.6 | 0.3 | | 2.0 | 0.8 | |
| Delay (s) | | 15.9 | | | 24.0 | | 14.7 | 13.0 | | 15.7 | 14.9 | |
| Level of Service | | B | | | C | | B | B | | B | B | |
| Approach Delay (s) | | 15.9 | | | 24.0 | | | 13.4 | | | 15.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 18.2 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 75.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 73.1% | | | ICU Level of Service | | | D | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1023: 103rd Street & Woodlawn Avenue

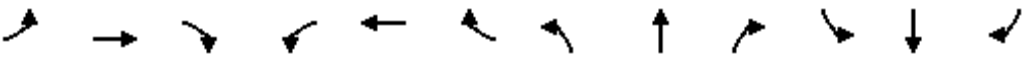










1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | | |  | |
| Volume (vph) | 98 | 871 | 6 | 20 | 584 | 249 | 1 | 1 | 9 | 213 | 1 | 80 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 13 | 13 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | | 0.95 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.89 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1605 | 3206 | | 1660 | 3320 | 1485 | | 1545 | | | 3176 | |
| Flt Permitted | 0.38 | 1.00 | | 0.25 | 1.00 | 1.00 | | 0.98 | | | 0.77 | |
| Satd. Flow (perm) | 648 | 3206 | | 436 | 3320 | 1485 | | 1519 | | | 2533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 109 | 968 | 7 | 22 | 649 | 277 | 1 | 1 | 10 | 237 | 1 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 103 | 0 | 7 | 0 | 0 | 52 | 0 |
| Lane Group Flow (vph) | 109 | 975 | 0 | 22 | 649 | 174 | 0 | 5 | 0 | 0 | 275 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | 8 | | 2 | | 6 | | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Effective Green, g (s) | 46.1 | 46.1 | | 46.1 | 46.1 | 46.1 | | 19.5 | | | 19.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | 0.26 | | | 0.26 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 8.0 | | | 8.0 | |
| Lane Grp Cap (vph) | 406 | 2008 | | 273 | 2080 | 930 | | 402 | | | 671 | |
| v/s Ratio Prot | c0.30 | | | 0.20 | | | | | | | | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | 0.12 | | 0.00 | | | c0.11 | |
| v/c Ratio | 0.27 | 0.49 | | 0.08 | 0.31 | 0.19 | | 0.01 | | | 0.41 | |
| Uniform Delay, d1 | 6.2 | 7.4 | | 5.4 | 6.4 | 5.8 | | 19.9 | | | 22.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 1.6 | 0.8 | | 0.6 | 0.4 | 0.4 | | 0.0 | | | 1.7 | |
| Delay (s) | 7.8 | 8.2 | | 6.0 | 6.8 | 6.3 | | 20.0 | | | 24.0 | |
| Level of Service | A | A | | A | A | A | | B | | | C | |
| Approach Delay (s) | 8.2 | | | 6.6 | | | | 20.0 | | | 24.0 | |
| Approach LOS | A | | | A | | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.46 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 73.6 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 58.1% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1024: 107th Street & Halsted Street

1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|-------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 131 | 228 | 125 | 94 | 163 | 56 | 144 | 907 | 90 | 129 | 825 | 98 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 9 | 12 | 10 | 10 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1560 | 1504 | | 1563 | 1585 | | 1493 | 3069 | 1337 | 1523 | 3099 | 1318 |
| Flt Permitted | 0.45 | 1.00 | | 0.20 | 1.00 | | 0.20 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1504 | | 337 | 1585 | | 317 | 3069 | 1337 | 263 | 3099 | 1318 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 138 | 240 | 132 | 99 | 172 | 59 | 152 | 955 | 95 | 136 | 868 | 103 |
| RTOR Reduction (vph) | 0 | 23 | 0 | 0 | 15 | 0 | 0 | 0 | 40 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 138 | 349 | 0 | 99 | 216 | 0 | 152 | 955 | 55 | 136 | 868 | 55 |
| Confl. Peds. (#/hr) | 10 | | 13 | 13 | | 10 | 18 | | 7 | 7 | | 18 |
| Confl. Bikes (#/hr) | 2 | | | | | 2 | 2 | | 1 | 1 | | 2 |
| Heavy Vehicles (%) | 2% | 1% | 1% | 2% | 1% | 2% | 3% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | Perm | pm+pt | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 28.0 | 21.0 | | 28.0 | 21.0 | | 42.0 | 35.0 | 35.0 | 42.0 | 35.0 | 35.0 |
| Effective Green, g (s) | 26.0 | 22.0 | | 26.0 | 22.0 | | 40.0 | 35.0 | 35.0 | 40.0 | 35.0 | 35.0 |
| Actuated g/C Ratio | 0.31 | 0.26 | | 0.31 | 0.26 | | 0.47 | 0.41 | 0.41 | 0.47 | 0.41 | 0.41 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 285 | 389 | | 190 | 410 | | 232 | 1264 | 551 | 213 | 1276 | 543 |
| v/s Ratio Prot | 0.03 | c0.23 | | c0.04 | 0.14 | | c0.05 | c0.31 | | 0.05 | 0.28 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.26 | | 0.04 | 0.26 | | 0.04 |
| v/c Ratio | 0.48 | 0.90 | | 0.52 | 0.53 | | 0.66 | 0.76 | 0.10 | 0.64 | 0.68 | 0.10 |
| Uniform Delay, d1 | 22.7 | 30.4 | | 22.9 | 27.0 | | 14.7 | 21.3 | 15.3 | 15.0 | 20.4 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.67 | 0.79 | 0.53 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.8 | 25.9 | | 9.9 | 4.8 | | 12.3 | 3.8 | 0.3 | 13.8 | 2.9 | 0.4 |
| Delay (s) | 28.4 | 56.3 | | 32.7 | 31.8 | | 22.1 | 20.7 | 8.5 | 28.8 | 23.4 | 15.7 |
| Level of Service | C | E | | C | C | | C | C | A | C | C | B |
| Approach Delay (s) | | 48.8 | | | 32.1 | | | 19.9 | | | 23.3 | |
| Approach LOS | | D | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.77 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 74.0% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1025: 107th Street & Wentworth Avenue

1/14/2013























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|------|----------------------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 22 | 181 | 37 | 20 | 173 | 22 | 33 | 149 | 40 | 46 | 255 | 50 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 14 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1837 | | | 1848 | | | 1938 | | | 1975 | |
| Flt Permitted | | 0.97 | | | 0.96 | | | 0.92 | | | 0.94 | |
| Satd. Flow (perm) | | 1781 | | | 1790 | | | 1800 | | | 1869 | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 23 | 187 | 38 | 21 | 178 | 23 | 34 | 154 | 41 | 47 | 263 | 52 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 238 | 0 | 0 | 216 | 0 | 0 | 217 | 0 | 0 | 353 | 0 |
| Confl. Peds. (#/hr) | 18 | | 34 | 34 | | 18 | 16 | | 19 | 19 | | 16 |
| Confl. Bikes (#/hr) | | | 6 | 6 | | | 1 | | 4 | 4 | | 1 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 5% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 27.0 | | | 27.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.46 | | | 0.46 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 740 | | | 744 | | | 831 | | | 863 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.13 | | | 0.12 | | | 0.12 | | | c0.19 | |
| v/c Ratio | | 0.32 | | | 0.29 | | | 0.26 | | | 0.41 | |
| Uniform Delay, d1 | | 12.8 | | | 12.6 | | | 10.7 | | | 11.6 | |
| Progression Factor | | 1.00 | | | 0.70 | | | 1.22 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | | 1.0 | | | 0.7 | | | 1.4 | |
| Delay (s) | | 14.0 | | | 9.8 | | | 13.8 | | | 13.0 | |
| Level of Service | | B | | | A | | | B | | | B | |
| Approach Delay (s) | | 14.0 | | | 9.8 | | | 13.8 | | | 13.0 | |
| Approach LOS | | B | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 51.2% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1026: 107th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 24 | 193 | 39 | 25 | 180 | 19 | 49 | 200 | 31 | 43 | 214 | 39 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.97 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1496 | 3057 | | 1577 | 3119 | | 1518 | 3119 | | 1550 | 3076 | |
| Flt Permitted | 0.61 | 1.00 | | 0.59 | 1.00 | | 0.58 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 966 | 3057 | | 984 | 3119 | | 926 | 3119 | | 968 | 3076 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 27 | 214 | 43 | 28 | 200 | 21 | 54 | 222 | 34 | 48 | 238 | 43 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 27 | 231 | 0 | 28 | 209 | 0 | 54 | 242 | 0 | 48 | 263 | 0 |
| Confl. Peds. (#/hr) | 20 | | 17 | 17 | | 20 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | 32 | | 36 | 36 | | 32 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 4% | 1% | 0% | 0% | 0% | 0% | 5% | 0% | 0% | 3% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 39.0 | 39.0 | | 39.0 | 39.0 | |
| Effective Green, g (s) | 19.0 | 19.0 | | 19.0 | 19.0 | | 38.0 | 38.0 | | 38.0 | 38.0 | |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 282 | 894 | | 288 | 912 | | 541 | 1823 | | 566 | 1798 | |
| v/s Ratio Prot | c0.08 | | | 0.07 | | | 0.08 | | | c0.09 | | |
| v/s Ratio Perm | 0.03 | | | 0.03 | | | 0.06 | | | 0.05 | | |
| v/c Ratio | 0.10 | 0.26 | | 0.10 | 0.23 | | 0.10 | 0.13 | | 0.08 | 0.15 | |
| Uniform Delay, d1 | 16.7 | 17.6 | | 16.8 | 17.4 | | 6.0 | 6.1 | | 5.9 | 6.1 | |
| Progression Factor | 0.93 | 0.97 | | 0.73 | 0.73 | | 1.32 | 1.32 | | 0.38 | 0.34 | |
| Incremental Delay, d2 | 0.6 | 0.7 | | 0.7 | 0.6 | | 0.4 | 0.1 | | 0.3 | 0.2 | |
| Delay (s) | 16.2 | 17.7 | | 12.9 | 13.3 | | 8.2 | 8.2 | | 2.5 | 2.3 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | 17.5 | | | 13.2 | | | 8.2 | | | 2.3 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 9.9 | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | | | 0.18 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1027: 107th Street & Michigan Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 67 | 168 | 42 | 25 | 159 | 38 | 27 | 247 | 16 | 40 | 322 | 33 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 9 | 9 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.97 | | | 0.99 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1555 | 3056 | | 1525 | 2937 | | | 1922 | | | 1938 | |
| Flt Permitted | 0.61 | 1.00 | | 0.61 | 1.00 | | | 0.94 | | | 0.94 | |
| Satd. Flow (perm) | 1007 | 3056 | | 973 | 2937 | | | 1823 | | | 1840 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 74 | 187 | 47 | 28 | 177 | 42 | 30 | 274 | 18 | 44 | 358 | 37 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 74 | 206 | 0 | 28 | 194 | 0 | 0 | 319 | 0 | 0 | 434 | 0 |
| Confl. Peds. (#/hr) | 11 | | 17 | 17 | | 11 | 26 | | 7 | 7 | | 26 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 1% | 3% | 4% | 5% | 0% | 0% | 4% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Effective Green, g (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | | 31.0 | | | 31.0 | |
| Actuated g/C Ratio | 0.40 | 0.40 | | 0.40 | 0.40 | | | 0.48 | | | 0.48 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 403 | 1222 | | 389 | 1175 | | | 869 | | | 878 | |
| v/s Ratio Prot | | 0.07 | | | 0.07 | | | | | | | |
| v/s Ratio Perm | c0.07 | | | 0.03 | | | | 0.17 | | | c0.24 | |
| v/c Ratio | 0.18 | 0.17 | | 0.07 | 0.16 | | | 0.37 | | | 0.49 | |
| Uniform Delay, d1 | 12.6 | 12.5 | | 12.0 | 12.5 | | | 10.8 | | | 11.6 | |
| Progression Factor | 1.04 | 0.99 | | 0.80 | 0.80 | | | 1.08 | | | 1.00 | |
| Incremental Delay, d2 | 1.0 | 0.3 | | 0.3 | 0.3 | | | 1.2 | | | 2.0 | |
| Delay (s) | 14.1 | 12.7 | | 10.0 | 10.3 | | | 12.8 | | | 13.6 | |
| Level of Service | B | B | | A | B | | | B | | | B | |
| Approach Delay (s) | | 13.0 | | | 10.2 | | | 12.8 | | | 13.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.6 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 57.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1028: 107th Street & Martin Luther King Jr Drive























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (vph) | 47 | 111 | 28 | 20 | 161 | 27 | 41 | 235 | 11 | 33 | 364 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 16 | 12 | 10 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 1.00 | |
| Satd. Flow (prot) | 1652 | 1970 | | 1584 | 1975 | | | 1981 | | | 1979 | |
| Flt Permitted | 0.57 | 1.00 | | 0.65 | 1.00 | | | 0.90 | | | 0.96 | |
| Satd. Flow (perm) | 986 | 1970 | | 1087 | 1975 | | | 1792 | | | 1912 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 123 | 31 | 22 | 179 | 30 | 46 | 261 | 12 | 37 | 404 | 63 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 52 | 154 | 0 | 22 | 209 | 0 | 0 | 319 | 0 | 0 | 504 | 0 |
| Confl. Peds. (#/hr) | 1 | | 10 | 10 | | 1 | 2 | | 5 | 5 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | | 37.0 | | | 37.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | | 0.57 | | | 0.57 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 303 | 606 | | 334 | 608 | | | 1020 | | | 1088 | |
| v/s Ratio Prot | | 0.08 | | | c0.11 | | | | | | | |
| v/s Ratio Perm | 0.05 | | | 0.02 | | | | 0.18 | | | c0.26 | |
| v/c Ratio | 0.17 | 0.25 | | 0.07 | 0.34 | | | 0.31 | | | 0.46 | |
| Uniform Delay, d1 | 16.4 | 16.9 | | 15.9 | 17.4 | | | 7.3 | | | 8.2 | |
| Progression Factor | 0.83 | 0.81 | | 0.96 | 0.98 | | | 0.82 | | | 1.00 | |
| Incremental Delay, d2 | 1.2 | 1.0 | | 0.4 | 1.5 | | | 0.8 | | | 1.4 | |
| Delay (s) | 14.8 | 14.6 | | 15.6 | 18.7 | | | 6.8 | | | 9.6 | |
| Level of Service | B | B | | B | B | | | A | | | A | |
| Approach Delay (s) | | 14.7 | | | 18.4 | | | 6.8 | | | 9.6 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.3 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.42 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 56.5% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1029: 107th Street & Cottage Grove Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 54 | 13 | 97 | 2 | 5 | 10 | 62 | 235 | 5 | 5 | 466 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 10 | 10 | 10 | 11 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1695 | 1727 | | 1702 | 1808 | | 1594 | 1647 | 1428 | 1653 | 2000 | 1496 |
| Flt Permitted | 0.75 | 1.00 | | 0.68 | 1.00 | | 0.39 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1332 | 1727 | | 1216 | 1808 | | 660 | 1647 | 1428 | 1030 | 2000 | 1496 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 60 | 14 | 108 | 2 | 6 | 11 | 69 | 261 | 6 | 6 | 518 | 84 |
| RTOR Reduction (vph) | 0 | 78 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 60 | 44 | 0 | 2 | 9 | 0 | 69 | 261 | 4 | 6 | 518 | 56 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 3 | | | | | 3 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 2% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 17.0 | 17.0 | | 17.0 | 17.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Effective Green, g (s) | 18.0 | 18.0 | | 18.0 | 18.0 | | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| Actuated g/C Ratio | 0.28 | 0.28 | | 0.28 | 0.28 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 369 | 478 | | 337 | 501 | | 396 | 988 | 857 | 618 | 1200 | 898 |
| v/s Ratio Prot | | 0.03 | | | 0.01 | | | 0.16 | | | c0.26 | |
| v/s Ratio Perm | c0.05 | | | 0.00 | | | 0.10 | | 0.00 | 0.01 | | 0.04 |
| v/c Ratio | 0.16 | 0.09 | | 0.01 | 0.02 | | 0.17 | 0.26 | 0.00 | 0.01 | 0.43 | 0.06 |
| Uniform Delay, d1 | 17.8 | 17.4 | | 17.0 | 17.1 | | 5.8 | 6.2 | 5.2 | 5.2 | 7.0 | 5.4 |
| Progression Factor | 1.39 | 2.73 | | 1.00 | 1.00 | | 1.18 | 1.10 | 1.46 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | | 0.0 | 0.1 | | 0.7 | 0.5 | 0.0 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 25.7 | 48.0 | | 17.1 | 17.1 | | 7.6 | 7.3 | 7.6 | 5.3 | 8.2 | 5.5 |
| Level of Service | C | D | | B | B | | A | A | A | A | A | A |
| Approach Delay (s) | | 40.6 | | | 17.1 | | | 7.4 | | | 7.8 | |
| Approach LOS | | D | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.0 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1030: 111th Street & Marshfield Avenue



















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | ↑ | | ↑ | ↑↑ | |
| Volume (vph) | 0 | 255 | 163 | 198 | 215 | 0 | 0 | 0 | 0 | 111 | 470 | 377 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 |
| Total Lost time (s) | | 4.0 | | 3.0 | 3.0 | | | | | 5.0 | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | |
| Frt | | 0.94 | | 1.00 | 1.00 | | | | | 1.00 | 0.93 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 2905 | | 1693 | 3288 | | | | | 1503 | 3021 | |
| Flt Permitted | | 1.00 | | 0.40 | 1.00 | | | | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 2905 | | 719 | 3288 | | | | | 1503 | 3021 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 268 | 172 | 208 | 226 | 0 | 0 | 0 | 0 | 117 | 495 | 397 |
| RTOR Reduction (vph) | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 0 |
| Lane Group Flow (vph) | 0 | 339 | 0 | 208 | 226 | 0 | 0 | 0 | 0 | 117 | 751 | 0 |
| Confl. Peds. (#/hr) | 18 | | 3 | 3 | | 18 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 4% | 1% | 1% | 4% | 0% | 0% | 0% | 0% | 10% | 2% | 1% |
| Turn Type | D.P+P | | | | | | | | | Split | | |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Effective Green, g (s) | | 33.0 | | 53.0 | 56.0 | | | | | 37.0 | 37.0 | |
| Actuated g/C Ratio | | 0.32 | | 0.52 | 0.55 | | | | | 0.36 | 0.36 | |
| Clearance Time (s) | | 4.0 | | 3.0 | | | | | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 940 | | 565 | 1805 | | | | | 545 | 1096 | |
| v/s Ratio Prot | | 0.12 | | c0.07 | 0.07 | | | | | 0.08 | c0.25 | |
| v/s Ratio Perm | | | | c0.12 | | | | | | | | |
| v/c Ratio | | 0.36 | | 0.37 | 0.13 | | | | | 0.21 | 0.68 | |
| Uniform Delay, d1 | | 26.4 | | 13.7 | 11.1 | | | | | 22.5 | 27.6 | |
| Progression Factor | | 1.00 | | 2.23 | 2.15 | | | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 1.6 | 0.1 | | | | | 0.9 | 3.5 | |
| Delay (s) | | 27.5 | | 32.0 | 24.0 | | | | | 23.4 | 31.0 | |
| Level of Service | | C | | C | C | | | | | C | C | |
| Approach Delay (s) | | 27.5 | | | 27.9 | | | 0.0 | | | 30.1 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | | 11.0 | | |
| Intersection Capacity Utilization | | | 62.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1031: 111th Street & Hamlet Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 141 | 225 | 0 | 0 | 336 | 119 | 77 | 539 | 236 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 9 | 12 | 13 | 12 | 13 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 1.00 | 1.00 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.99 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.96 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1675 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Flt Permitted | 0.32 | 1.00 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 571 | 3196 | | | 2855 | | 1767 | 1782 | 1560 | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 148 | 237 | 0 | 0 | 354 | 125 | 81 | 567 | 248 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 170 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 148 | 237 | 0 | 0 | 444 | 0 | 81 | 567 | 78 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 9 | | 13 | 13 | | 9 | | | 1 | 1 | | |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | | | | | | |
| Heavy Vehicles (%) | 2% | 7% | 0% | 0% | 3% | 1% | 0% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | Perm | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Effective Green, g (s) | 59.0 | 63.0 | | | 26.0 | | 30.0 | 30.0 | 30.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.62 | | | 0.25 | | 0.29 | 0.29 | 0.29 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 5.0 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | 687 | 1974 | | | 728 | | 520 | 524 | 459 | | | |
| v/s Ratio Prot | c0.07 | 0.07 | | | c0.16 | | 0.05 | c0.32 | | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | 0.05 | | | |
| v/c Ratio | 0.22 | 0.12 | | | 0.61 | | 0.16 | 1.08 | 0.17 | | | |
| Uniform Delay, d1 | 10.4 | 8.1 | | | 33.5 | | 26.6 | 36.0 | 26.7 | | | |
| Progression Factor | 0.42 | 0.43 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.1 | | | 3.8 | | 0.6 | 63.3 | 0.8 | | | |
| Delay (s) | 5.0 | 3.6 | | | 37.3 | | 27.3 | 99.3 | 27.5 | | | |
| Level of Service | A | A | | | D | | C | F | C | | | |
| Approach Delay (s) | | 4.1 | | | 37.3 | | | 73.0 | | | 0.0 | |
| Approach LOS | | A | | | D | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.62 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 102.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 63.1% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1032: 112th Place & Marshfield Avenue

1/14/2013



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|-------|-------|----------------------|------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 517 | 479 | 81 | 534 | 0 | 0 | 0 | 0 | 13 | 436 | 301 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.93 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 3099 | | 1710 | 3306 | | | | | 1596 | 3192 | 1530 |
| Flt Permitted | | 1.00 | | 0.11 | 1.00 | | | | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 3099 | | 200 | 3306 | | | | | 1596 | 3192 | 1530 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 0 | 539 | 499 | 84 | 556 | 0 | 0 | 0 | 0 | 14 | 454 | 314 |
| RTOR Reduction (vph) | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 200 |
| Lane Group Flow (vph) | 0 | 870 | 0 | 84 | 556 | 0 | 0 | 0 | 0 | 14 | 454 | 114 |
| Confl. Peds. (#/hr) | 8 | | 8 | 8 | | 8 | 3 | | | | | 3 |
| Confl. Bikes (#/hr) | 9 | | | | | 9 | | | 61 | 61 | | |
| Heavy Vehicles (%) | 0% | 1% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | | | | pm+pt | | | | | | Split | | Prot |
| Protected Phases | | 8 | | 7 | 7 8 | | | | | 6 | 6 | 6 |
| Permitted Phases | | | | 7 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Effective Green, g (s) | | 36.0 | | 54.0 | 58.0 | | | | | 34.0 | 34.0 | 34.0 |
| Actuated g/C Ratio | | 0.36 | | 0.54 | 0.58 | | | | | 0.34 | 0.34 | 0.34 |
| Clearance Time (s) | | 4.0 | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1116 | | 380 | 1917 | | | | | 543 | 1085 | 520 |
| v/s Ratio Prot | | c0.28 | | 0.04 | c0.17 | | | | | 0.01 | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.08 | | | | | | | | |
| v/c Ratio | | 0.78 | | 0.22 | 0.29 | | | | | 0.03 | 0.42 | 0.22 |
| Uniform Delay, d1 | | 28.5 | | 14.4 | 10.6 | | | | | 22.0 | 25.4 | 23.5 |
| Progression Factor | | 1.00 | | 1.01 | 1.19 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.4 | | 0.9 | 0.3 | | | | | 0.1 | 1.2 | 1.0 |
| Delay (s) | | 33.9 | | 15.5 | 12.9 | | | | | 22.1 | 26.6 | 24.5 |
| Level of Service | | C | | B | B | | | | | C | C | C |
| Approach Delay (s) | | 33.9 | | | 13.2 | | | 0.0 | | | 25.7 | |
| Approach LOS | | C | | | B | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.55 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 93.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1033: 112th Place & Hamlet Avenue


1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  |  | | | |
| Volume (vph) | 422 | 104 | 0 | 0 | 150 | 6 | 465 | 480 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 12 | 12 | 12 | 10 | 12 | 11 | 11 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Util. Factor | 0.91 | 0.91 | | | 0.95 | | 0.95 | 0.95 | 1.00 | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | | | 0.99 | | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 0.97 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | 1469 | 3109 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Flt Permitted | 0.64 | 0.71 | | | 1.00 | | 0.95 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | 992 | 2286 | | | 3170 | | 1555 | 1653 | 1530 | | | |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 435 | 107 | 0 | 0 | 155 | 6 | 479 | 495 | 60 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 38 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 217 | 325 | 0 | 0 | 158 | 0 | 479 | 495 | 22 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 13 | | 6 | 6 | | 13 | | | 8 | 8 | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | 2 | 2 | | |
| Heavy Vehicles (%) | 2% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | | custom | | | custom | | |
| Protected Phases | 4 | 1 4 | | | 1 | | 2 | 2 | 2 | | | |
| Permitted Phases | 1 4 | | | | | | 2 | | 2 | | | |
| Actuated Green, G (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Effective Green, g (s) | 51.0 | 51.0 | | | 15.0 | | 37.0 | 37.0 | 37.0 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | | | 0.15 | | 0.37 | 0.37 | 0.37 | | | |
| Clearance Time (s) | 4.0 | | | | 4.0 | | 4.0 | 4.0 | 4.0 | | | |
| Lane Grp Cap (vph) | 678 | 1462 | | | 476 | | 575 | 612 | 566 | | | |
| v/s Ratio Prot | c0.12 | 0.08 | | | c0.05 | | c0.31 | 0.30 | 0.01 | | | |
| v/s Ratio Perm | 0.05 | 0.03 | | | | | | | | | | |
| v/c Ratio | 0.32 | 0.22 | | | 0.33 | | 0.83 | 0.81 | 0.04 | | | |
| Uniform Delay, d1 | 14.1 | 13.5 | | | 38.0 | | 28.7 | 28.3 | 20.1 | | | |
| Progression Factor | 0.25 | 0.26 | | | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.7 | 0.2 | | | 1.9 | | 13.3 | 11.0 | 0.1 | | | |
| Delay (s) | 4.2 | 3.7 | | | 39.9 | | 42.0 | 39.3 | 20.3 | | | |
| Level of Service | A | A | | | D | | D | D | C | | | |
| Approach Delay (s) | | 3.9 | | | 39.9 | | | 39.5 | | | 0.0 | |
| Approach LOS | | A | | | D | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.4 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.54 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 93.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1034: 111th Street & Halsted Street

1/14/2013
















| |  | | | | | | | | | | | |
|-----------------------------------|--|-------|-------|------|-------|----------------------|-------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↕ | | | ↕↕ | | ↗ | ↕↕ | ↗ | ↗ | ↕↕ | ↗ |
| Volume (vph) | 78 | 316 | 117 | 109 | 270 | 111 | 87 | 699 | 76 | 100 | 884 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | 4.0 | 3.5 | 4.0 | 4.0 | 3.5 | 4.0 |
| Lane Util. Factor | | 0.95 | | | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.97 | | | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 2955 | | | 2935 | | 1508 | 3069 | 1309 | 1508 | 3099 | 1298 |
| Flt Permitted | | 0.77 | | | 0.72 | | 0.16 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 2281 | | | 2151 | | 254 | 3069 | 1309 | 401 | 3099 | 1298 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 81 | 329 | 122 | 114 | 281 | 116 | 91 | 728 | 79 | 104 | 921 | 68 |
| RTOR Reduction (vph) | 0 | 33 | 0 | 0 | 32 | 0 | 0 | 0 | 48 | 0 | 0 | 33 |
| Lane Group Flow (vph) | 0 | 499 | 0 | 0 | 479 | 0 | 91 | 728 | 31 | 104 | 921 | 35 |
| Confl. Peds. (#/hr) | 35 | | 30 | 30 | | 35 | 34 | | 8 | 8 | | 34 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 1% | 4% | 0% | 1% | 3% | 3% | 2% | 4% | 2% | 2% | 3% | 2% |
| Turn Type | pm+pt | | | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 35.0 | | | 27.0 | | 38.0 | 33.0 | 33.0 | 38.0 | 33.0 | 33.0 |
| Effective Green, g (s) | | 36.0 | | | 28.0 | | 36.0 | 33.5 | 33.0 | 36.0 | 33.5 | 33.0 |
| Actuated g/C Ratio | | 0.42 | | | 0.33 | | 0.42 | 0.39 | 0.39 | 0.42 | 0.39 | 0.39 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 1014 | | | 709 | | 167 | 1210 | 508 | 222 | 1221 | 504 |
| v/s Ratio Prot | | c0.03 | | | | | c0.03 | 0.24 | | 0.02 | c0.30 | |
| v/s Ratio Perm | | 0.17 | | | c0.22 | | 0.21 | | 0.02 | 0.18 | | 0.03 |
| v/c Ratio | | 0.49 | | | 0.68 | | 0.54 | 0.60 | 0.06 | 0.47 | 0.75 | 0.07 |
| Uniform Delay, d1 | | 17.8 | | | 24.6 | | 16.8 | 20.5 | 16.3 | 15.9 | 22.2 | 16.3 |
| Progression Factor | | 1.00 | | | 1.00 | | 1.48 | 0.68 | 0.77 | 1.11 | 1.16 | 1.74 |
| Incremental Delay, d2 | | 1.7 | | | 5.1 | | 11.1 | 2.0 | 0.2 | 5.0 | 3.1 | 0.2 |
| Delay (s) | | 19.6 | | | 29.7 | | 36.0 | 16.0 | 12.8 | 22.6 | 29.0 | 28.6 |
| Level of Service | | B | | | C | | D | B | B | C | C | C |
| Approach Delay (s) | | 19.6 | | | 29.7 | | | 17.8 | | | 28.3 | |
| Approach LOS | | B | | | C | | | B | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.71 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 15.5 | | | |
| Intersection Capacity Utilization | | | 76.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1035: 111th Street & Normal Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 76 | 410 | 0 | 0 | 367 | 84 | 54 | 44 | 33 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | | 1734 | | | 1704 | | | 1654 | | | | |
| Flt Permitted | | 0.87 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | | 1519 | | | 1704 | | | 1654 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 84 | 456 | 0 | 0 | 408 | 93 | 60 | 49 | 37 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 19 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 540 | 0 | 0 | 489 | 0 | 0 | 127 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | | | | 2 | | | | | |
| Actuated Green, G (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 19.0 | | | | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.29 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Grp Cap (vph) | | 888 | | | 996 | | | 483 | | | | |
| v/s Ratio Prot | | | | | 0.29 | | | | | | | |
| v/s Ratio Perm | | c0.36 | | | | | | 0.08 | | | | |
| v/c Ratio | | 0.61 | | | 0.49 | | | 0.26 | | | | |
| Uniform Delay, d1 | | 8.7 | | | 7.9 | | | 17.6 | | | | |
| Progression Factor | | 1.00 | | | 0.76 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 3.1 | | | 1.5 | | | 1.3 | | | | |
| Delay (s) | | 11.8 | | | 7.5 | | | 19.0 | | | | |
| Level of Service | | B | | | A | | | B | | | | |
| Approach Delay (s) | | 11.8 | | | 7.5 | | | 19.0 | | | 0.0 | |
| Approach LOS | | B | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.49 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 70.7% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1036: 111th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 29 | 374 | 37 | 39 | 369 | 50 | 31 | 118 | 39 | 53 | 150 | 45 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 10 | 12 | 12 | 10 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | | 1954 | | | 1941 | | | 2969 | | | 2981 | |
| Flt Permitted | | 0.95 | | | 0.94 | | | 0.88 | | | 0.86 | |
| Satd. Flow (perm) | | 1869 | | | 1825 | | | 2646 | | | 2589 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 32 | 416 | 41 | 43 | 410 | 56 | 34 | 131 | 43 | 59 | 167 | 50 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 7 | 0 | 0 | 25 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 0 | 484 | 0 | 0 | 502 | 0 | 0 | 183 | 0 | 0 | 247 | 0 |
| Confl. Peds. (#/hr) | 32 | | 25 | 25 | | 32 | 59 | | 24 | 24 | | 59 |
| Confl. Bikes (#/hr) | 3 | | 2 | 2 | | 3 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 3% | 3% | 0% | 0% | 0% | 7% | 4% | 0% | 0% |
| Turn Type | Perm | | Perm | | Perm | | Perm | | Perm | | Perm | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 30.0 | | | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | | 863 | | | 842 | | | 1099 | | | 1075 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.28 | | | 0.07 | | | 0.10 | |
| v/c Ratio | | 0.56 | | | 0.60 | | | 0.17 | | | 0.23 | |
| Uniform Delay, d1 | | 12.7 | | | 13.0 | | | 11.9 | | | 12.3 | |
| Progression Factor | | 0.56 | | | 0.40 | | | 1.30 | | | 0.44 | |
| Incremental Delay, d2 | | 2.2 | | | 2.7 | | | 0.3 | | | 0.5 | |
| Delay (s) | | 9.2 | | | 7.9 | | | 15.8 | | | 5.9 | |
| Level of Service | | A | | | A | | | B | | | A | |
| Approach Delay (s) | | 9.2 | | | 7.9 | | | 15.8 | | | 5.9 | |
| Approach LOS | | A | | | A | | | B | | | A | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 9.1 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.42 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 73.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1037: 111th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 51 | 320 | 49 | 81 | 464 | 86 | 46 | 219 | 98 | 83 | 227 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 9 | 10 | 10 | 9 | 10 | 10 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.95 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1510 | 3034 | | 1572 | 3077 | | 1587 | 2962 | | 1585 | 3071 | |
| Flt Permitted | 0.32 | 1.00 | | 0.47 | 1.00 | | 0.56 | 1.00 | | 0.54 | 1.00 | |
| Satd. Flow (perm) | 505 | 3034 | | 775 | 3077 | | 928 | 2962 | | 903 | 3071 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 57 | 356 | 54 | 90 | 516 | 96 | 51 | 243 | 109 | 92 | 252 | 72 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 24 | 0 | 0 | 50 | 0 | 0 | 33 | 0 |
| Lane Group Flow (vph) | 57 | 391 | 0 | 90 | 588 | 0 | 51 | 302 | 0 | 92 | 291 | 0 |
| Confl. Peds. (#/hr) | 20 | | 31 | 31 | | 20 | 16 | | 20 | 20 | | 16 |
| Confl. Bikes (#/hr) | | | | | | | 1 | | 3 | 3 | | 1 |
| Heavy Vehicles (%) | 5% | 3% | 0% | 0% | 1% | 0% | 0% | 2% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 22.0 | 22.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.34 | 0.34 | | 0.54 | 0.54 | | 0.54 | 0.54 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Grp Cap (vph) | 171 | 1027 | | 262 | 1041 | | 500 | 1595 | | 486 | 1654 | |
| v/s Ratio Prot | | 0.13 | | | c0.19 | | | 0.10 | | | 0.09 | |
| v/s Ratio Perm | 0.11 | | | 0.12 | | | 0.05 | | | c0.10 | | |
| v/c Ratio | 0.33 | 0.38 | | 0.34 | 0.57 | | 0.10 | 0.19 | | 0.19 | 0.18 | |
| Uniform Delay, d1 | 16.0 | 16.3 | | 16.1 | 17.6 | | 7.3 | 7.7 | | 7.7 | 7.6 | |
| Progression Factor | 0.67 | 0.64 | | 0.95 | 0.95 | | 0.74 | 0.64 | | 1.09 | 1.08 | |
| Incremental Delay, d2 | 4.6 | 0.9 | | 3.5 | 2.2 | | 0.4 | 0.3 | | 0.9 | 0.2 | |
| Delay (s) | 15.3 | 11.4 | | 18.8 | 19.0 | | 5.8 | 5.2 | | 9.3 | 8.5 | |
| Level of Service | B | B | | B | B | | A | A | | A | A | |
| Approach Delay (s) | | 11.9 | | | 19.0 | | | 5.3 | | | 8.7 | |
| Approach LOS | | B | | | B | | | A | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 12.4 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.33 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 51.6% | | | ICU Level of Service | | | A | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1038: 111th Street & Michigan Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 59 | 338 | 78 | 87 | 414 | 50 | 46 | 231 | 58 | 46 | 279 | 65 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 9 | 10 | 9 | 9 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 0.98 | |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.99 | 1.00 | | | 0.99 | | | 1.00 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1509 | 3016 | | 1430 | 3722 | | | 3485 | | | 3519 | |
| Flt Permitted | 0.45 | 1.00 | | 0.48 | 1.00 | | | 0.86 | | | 0.88 | |
| Satd. Flow (perm) | 712 | 3016 | | 725 | 3722 | | | 3028 | | | 3118 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 62 | 356 | 82 | 92 | 436 | 53 | 48 | 243 | 61 | 48 | 294 | 68 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 15 | 0 | 0 | 27 | 0 | 0 | 25 | 0 |
| Lane Group Flow (vph) | 62 | 408 | 0 | 92 | 474 | 0 | 0 | 325 | 0 | 0 | 385 | 0 |
| Confl. Peds. (#/hr) | 38 | | 17 | 17 | | 38 | 125 | | 53 | 53 | | 125 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 7% | 2% | 0% | 0% | 6% | 10% | 2% | 5% | 5% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Effective Green, g (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | | 26.0 | | | 26.0 | |
| Actuated g/C Ratio | 0.48 | 0.48 | | 0.48 | 0.48 | | | 0.40 | | | 0.40 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 340 | 1438 | | 346 | 1775 | | | 1211 | | | 1247 | |
| v/s Ratio Prot | c0.14 | | | 0.13 | | | 0.11 | | | c0.12 | | |
| v/s Ratio Perm | 0.09 | | | 0.13 | | | | 0.11 | | | c0.12 | |
| v/c Ratio | 0.18 | 0.28 | | 0.27 | 0.27 | | | 0.27 | | | 0.31 | |
| Uniform Delay, d1 | 9.7 | 10.3 | | 10.2 | 10.2 | | | 13.1 | | | 13.3 | |
| Progression Factor | 1.59 | 1.74 | | 1.12 | 1.11 | | | 0.52 | | | 0.74 | |
| Incremental Delay, d2 | 1.1 | 0.5 | | 1.7 | 0.3 | | | 0.5 | | | 0.6 | |
| Delay (s) | 16.6 | 18.3 | | 13.1 | 11.6 | | | 7.3 | | | 10.4 | |
| Level of Service | B | B | | B | B | | | A | | | B | |
| Approach Delay (s) | 18.1 | | | 11.9 | | | 7.3 | | | 10.4 | | |
| Approach LOS | B | | | B | | | A | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | | | 0.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | | | 58.4% | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1039: 111th Street & Indiana Avenue



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  | | |  | |
| Volume (vph) | 86 | 284 | 91 | 92 | 289 | 92 | 120 | 82 | 47 | 47 | 82 | 119 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.97 | | | 0.97 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 0.99 | | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1670 | 1436 | | 3086 | | | 1885 | | | 1835 | |
| Flt Permitted | | 0.79 | 1.00 | | 0.79 | | | 0.68 | | | 0.90 | |
| Satd. Flow (perm) | | 1332 | 1436 | | 2469 | | | 1303 | | | 1674 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 96 | 316 | 101 | 102 | 321 | 102 | 133 | 91 | 52 | 52 | 91 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 48 | 0 | 32 | 0 | 0 | 13 | 0 | 0 | 51 | 0 |
| Lane Group Flow (vph) | 0 | 412 | 53 | 0 | 493 | 0 | 0 | 263 | 0 | 0 | 224 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | Perm | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Effective Green, g (s) | | 34.0 | 34.0 | | 34.0 | | | 21.0 | | | 21.0 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | | | 0.32 | | | 0.32 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 697 | 751 | | 1291 | | | 421 | | | 541 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.31 | 0.04 | | 0.20 | | | c0.20 | | | 0.13 | |
| v/c Ratio | | 0.59 | 0.07 | | 0.38 | | | 0.63 | | | 0.41 | |
| Uniform Delay, d1 | | 10.7 | 7.7 | | 9.2 | | | 18.7 | | | 17.2 | |
| Progression Factor | | 1.85 | 6.02 | | 0.52 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.6 | 0.2 | | 0.8 | | | 6.8 | | | 2.3 | |
| Delay (s) | | 23.3 | 46.4 | | 5.7 | | | 25.5 | | | 19.5 | |
| Level of Service | | C | D | | A | | | C | | | B | |
| Approach Delay (s) | | 27.9 | | | 5.7 | | | 25.5 | | | 19.5 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 18.7 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.60 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | |
| Intersection Capacity Utilization | | | 79.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1040: 111th Street & Martin Luther King Jr Drive

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 55 | 271 | 28 | 26 | 323 | 60 | 26 | 133 | 47 | 62 | 146 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 15 | 8 | 16 | 8 | 8 | 16 | 8 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 0.99 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.98 | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | | 0.97 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.99 | | | 0.99 | |
| Satd. Flow (prot) | 1443 | 3025 | | 1565 | 3018 | | | 3582 | | | 3599 | |
| Flt Permitted | 0.49 | 1.00 | | 0.55 | 1.00 | | | 0.90 | | | 0.84 | |
| Satd. Flow (perm) | 740 | 3025 | | 909 | 3018 | | | 3238 | | | 3069 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 61 | 301 | 31 | 29 | 359 | 67 | 29 | 148 | 52 | 69 | 162 | 70 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 24 | 0 | 0 | 30 | 0 | 0 | 41 | 0 |
| Lane Group Flow (vph) | 61 | 320 | 0 | 29 | 402 | 0 | 0 | 199 | 0 | 0 | 260 | 0 |
| Confl. Peds. (#/hr) | 24 | | 47 | 47 | | 24 | 9 | | 36 | 36 | | 9 |
| Confl. Bikes (#/hr) | | | 4 | 4 | | | 1 | | | | | 1 |
| Heavy Vehicles (%) | 9% | 4% | 0% | 0% | 3% | 0% | 0% | 1% | 10% | 0% | 0% | 8% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | 30.0 | 30.0 | | 30.0 | 30.0 | | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.46 | 0.46 | | | 0.42 | | | 0.42 | |
| Clearance Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 342 | 1396 | | 420 | 1393 | | | 1345 | | | 1275 | |
| v/s Ratio Prot | | 0.11 | | | c0.13 | | | | | | | |
| v/s Ratio Perm | 0.08 | | | 0.03 | | | | 0.06 | | | c0.08 | |
| v/c Ratio | 0.18 | 0.23 | | 0.07 | 0.29 | | | 0.15 | | | 0.20 | |
| Uniform Delay, d1 | 10.3 | 10.5 | | 9.7 | 10.9 | | | 11.8 | | | 12.1 | |
| Progression Factor | 0.69 | 0.69 | | 1.31 | 1.19 | | | 1.02 | | | 0.41 | |
| Incremental Delay, d2 | 0.9 | 0.3 | | 0.1 | 0.2 | | | 0.2 | | | 0.3 | |
| Delay (s) | 8.0 | 7.6 | | 12.9 | 13.2 | | | 12.3 | | | 5.4 | |
| Level of Service | A | A | | B | B | | | B | | | A | |
| Approach Delay (s) | | 7.7 | | | 13.2 | | | 12.3 | | | 5.4 | |
| Approach LOS | | A | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 9.8 | | | HCM Level of Service | | | A | | | | | |
| HCM Volume to Capacity ratio | 0.25 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | | |
| Intersection Capacity Utilization | 56.7% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1041: 111th Street & Cottage Grove Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 47 | 440 | 26 | 86 | 503 | 222 | 24 | 124 | 115 | 340 | 261 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | | 0.99 | | | 0.96 | | | 0.93 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.98 | |
| Satd. Flow (prot) | | 3280 | | | 3167 | | | 3089 | | | 3181 | |
| Flt Permitted | | 0.75 | | | 0.79 | | | 0.88 | | | 0.70 | |
| Satd. Flow (perm) | | 2462 | | | 2502 | | | 2739 | | | 2269 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 52 | 489 | 29 | 96 | 559 | 247 | 27 | 138 | 128 | 378 | 290 | 91 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 60 | 0 | 0 | 67 | 0 | 0 | 16 | 0 |
| Lane Group Flow (vph) | 0 | 564 | 0 | 0 | 842 | 0 | 0 | 226 | 0 | 0 | 743 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | pm+pt | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 24.0 | | | 24.0 | | | 31.0 | | | 23.0 | |
| Effective Green, g (s) | | 24.0 | | | 24.0 | | | 31.0 | | | 23.0 | |
| Actuated g/C Ratio | | 0.37 | | | 0.37 | | | 0.48 | | | 0.35 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 909 | | | 924 | | | 1333 | | | 803 | |
| v/s Ratio Prot | | | | | | | | c0.01 | | | | |
| v/s Ratio Perm | | 0.23 | | | c0.34 | | | 0.07 | | | c0.33 | |
| v/c Ratio | | 0.62 | | | 0.91 | | | 0.17 | | | 1.02dl | |
| Uniform Delay, d1 | | 16.8 | | | 19.5 | | | 9.7 | | | 20.2 | |
| Progression Factor | | 1.63 | | | 1.00 | | | 1.00 | | | 0.77 | |
| Incremental Delay, d2 | | 3.2 | | | 14.6 | | | 0.3 | | | 17.5 | |
| Delay (s) | | 30.5 | | | 34.1 | | | 10.0 | | | 33.1 | |
| Level of Service | | C | | | C | | | A | | | C | |
| Approach Delay (s) | | 30.5 | | | 34.1 | | | 10.0 | | | 33.1 | |
| Approach LOS | | C | | | C | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 30.2 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.88 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 15.0 | | | | |
| Intersection Capacity Utilization | | 85.7% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| dl Defacto Left Lane. Recode with 1 though lane as a left lane. | | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1042: 111th Street & Ellis Avenue






















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 0 | 895 | 128 | 48 | 792 | 0 | 81 | 0 | 36 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | | |
| Frt | | 0.98 | | | 1.00 | | | 0.96 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | | 3041 | | | 3090 | | | 1619 | | | | |
| Flt Permitted | | 1.00 | | | 0.80 | | | 0.79 | | | | |
| Satd. Flow (perm) | | 3041 | | | 2489 | | | 1329 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 994 | 142 | 53 | 880 | 0 | 90 | 0 | 40 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1121 | 0 | 0 | 933 | 0 | 0 | 112 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | custom | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 4 5 6 11 | | | 8 | | | 2 | | | 2 | | |
| Permitted Phases | 4 6 11 | | | 8 | | | 2 | | | 2 | | |
| Actuated Green, G (s) | 65.0 | | | 33.0 | | | 16.0 | | | | | |
| Effective Green, g (s) | 58.0 | | | 33.0 | | | 16.0 | | | | | |
| Actuated g/C Ratio | 0.64 | | | 0.37 | | | 0.18 | | | | | |
| Clearance Time (s) | | | | 5.0 | | | 5.0 | | | | | |
| Lane Grp Cap (vph) | 1960 | | | 913 | | | 236 | | | | | |
| v/s Ratio Prot | c0.37 | | | | | | | | | | | |
| v/s Ratio Perm | | | | c0.37 | | | c0.08 | | | | | |
| v/c Ratio | 0.57 | | | 1.02 | | | 0.47 | | | | | |
| Uniform Delay, d1 | 9.0 | | | 28.5 | | | 33.2 | | | | | |
| Progression Factor | 0.14 | | | 1.42 | | | 1.00 | | | | | |
| Incremental Delay, d2 | 0.3 | | | 34.2 | | | 6.7 | | | | | |
| Delay (s) | 1.6 | | | 74.8 | | | 39.9 | | | | | |
| Level of Service | A | | | E | | | D | | | | | |
| Approach Delay (s) | 1.6 | | | 74.8 | | | 39.9 | | | 0.0 | | |
| Approach LOS | A | | | E | | | D | | | A | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 35.0 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.77 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 90.0 | | | Sum of lost time (s) | | | 20.0 | | | | | |
| Intersection Capacity Utilization | 74.6% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1043: 111th Street & Doty Road













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  | |  | |  |  |  |
| Volume (vph) | 222 | 642 | 22 | 112 | 614 | 185 | 60 | 4 | 107 | 212 | 10 | 212 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 10 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | | 0.98 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1550 | 3194 | | 1660 | 3320 | 1485 | | 1782 | | 1660 | 1748 | 1485 |
| Flt Permitted | 0.29 | 1.00 | | 0.33 | 1.00 | 1.00 | | 0.88 | | 0.43 | 1.00 | 1.00 |
| Satd. Flow (perm) | 472 | 3194 | | 585 | 3320 | 1485 | | 1593 | | 758 | 1748 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 247 | 713 | 24 | 124 | 682 | 206 | 67 | 4 | 119 | 236 | 11 | 236 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 0 | 95 | 0 | 92 | 0 | 0 | 0 | 135 |
| Lane Group Flow (vph) | 247 | 735 | 0 | 124 | 682 | 111 | 0 | 98 | 0 | 236 | 11 | 101 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | pm+pt | | pm+ov | pm+pt | | | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | | 3 | 8 | 1 | 5 | 2 | | 1 | 6 | 7 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 55.0 | 42.6 | | 47.8 | 38.4 | 48.4 | | 12.0 | | 25.0 | 25.0 | 38.6 |
| Effective Green, g (s) | 55.0 | 42.6 | | 47.8 | 38.4 | 48.4 | | 12.0 | | 25.0 | 25.0 | 38.6 |
| Actuated g/C Ratio | 0.61 | 0.47 | | 0.53 | 0.43 | 0.54 | | 0.13 | | 0.28 | 0.28 | 0.43 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | 3.0 | | 5.0 | | 3.0 | 5.0 | 3.0 |
| Vehicle Extension (s) | 4.0 | 3.0 | | 4.0 | 3.0 | 3.0 | | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 451 | 1512 | | 423 | 1417 | 799 | | 212 | | 311 | 486 | 637 |
| v/s Ratio Prot | c0.08 | 0.23 | | 0.03 | 0.21 | 0.02 | | | | c0.08 | 0.01 | 0.02 |
| v/s Ratio Perm | c0.25 | | | 0.13 | | 0.06 | | 0.06 | | c0.13 | | 0.04 |
| v/c Ratio | 0.55 | 0.49 | | 0.29 | 0.48 | 0.14 | | 0.46 | | 0.76 | 0.02 | 0.16 |
| Uniform Delay, d1 | 9.2 | 16.2 | | 10.8 | 18.6 | 10.4 | | 36.0 | | 28.7 | 23.6 | 15.8 |
| Progression Factor | 2.65 | 1.87 | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 1.0 | | 0.5 | 1.2 | 0.1 | | 2.2 | | 10.2 | 0.0 | 0.2 |
| Delay (s) | 25.7 | 31.3 | | 11.3 | 19.8 | 10.5 | | 38.2 | | 38.9 | 23.6 | 15.9 |
| Level of Service | C | C | | B | B | B | | D | | D | C | B |
| Approach Delay (s) | | 29.9 | | | 16.9 | | | 38.2 | | | 27.3 | |
| Approach LOS | | C | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 25.1 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.58 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 61.6% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1044: 111th Street & Bishop Ford Freeway EB Ramps

1/14/2013



| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | | ↑ |
| Volume (veh/h) | 0 | 518 | 443 | 2 | 333 | 0 | 0 | 0 | 0 | 19 | 0 | 578 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 576 | 492 | 2 | 370 | 0 | 0 | 0 | 0 | 21 | 0 | 642 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | 498 | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 370 | | | 576 | | | 765 | 950 | 288 | 662 | 950 | 185 |
| tC, single (s) | 4.2 | | | 4.2 | | | 7.6 | 6.6 | 7.0 | 7.6 | 6.6 | 7.0 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 94 | 100 | 22 |
| cM capacity (veh/h) | 1178 | | | 987 | | | 64 | 256 | 706 | 345 | 256 | 823 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 | SB 2 | | | | | |
| Volume Total | 288 | 288 | 492 | 126 | 247 | 21 | 642 | | | | | |
| Volume Left | 0 | 0 | 0 | 2 | 0 | 21 | 0 | | | | | |
| Volume Right | 0 | 0 | 492 | 0 | 0 | 0 | 642 | | | | | |
| cSH | 1700 | 1700 | 1700 | 987 | 1700 | 345 | 823 | | | | | |
| Volume to Capacity | 0.17 | 0.17 | 0.29 | 0.00 | 0.15 | 0.06 | 0.78 | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | 5 | 198 | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 16.1 | 23.1 | | | | | |
| Lane LOS | | | | A | | C | | C | | | | |
| Approach Delay (s) | 0.0 | | | 0.1 | | | 22.8 | | | | | |
| Approach LOS | | | | | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 7.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.2% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1045: 111th Street & Bishop Ford Freeway WB Ramps

1/14/2013




| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|------|---|----------------------|------|------|
| Lane Configurations |  | |  | | | |
| Sign Control | Stop | | Stop | | Stop | |
| Volume (vph) | 537 | 0 | 335 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 597 | 0 | 372 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 298 | 298 | 372 | | | |
| Volume Left (vph) | 298 | 298 | 372 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.2 | 6.2 | 5.6 | | | |
| Degree Utilization, x | 0.51 | 0.51 | 0.58 | | | |
| Capacity (veh/h) | 568 | 570 | 619 | | | |
| Control Delay (s) | 14.3 | 14.3 | 16.0 | | | |
| Approach Delay (s) | 14.3 | | 16.0 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 14.9 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 42.4% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1046: 115th Street & Marshfield Avenue





















1/14/2013

| |  | | | | | | | | | | | |
|-----------------------------------|--|------|-------|-------|------|----------------------|------|------|------|-------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | | ↑↑ | |
| Volume (vph) | 0 | 472 | 90 | 192 | 594 | 0 | 0 | 0 | 0 | 101 | 21 | 58 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | 1.00 | 0.95 | | | | | | 0.95 | |
| Frt | | 0.98 | | 1.00 | 1.00 | | | | | | 0.95 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (prot) | | 3133 | | 1605 | 3210 | | | | | | 3074 | |
| Flt Permitted | | 1.00 | | 0.33 | 1.00 | | | | | | 0.97 | |
| Satd. Flow (perm) | | 3133 | | 559 | 3210 | | | | | | 3074 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 524 | 100 | 213 | 660 | 0 | 0 | 0 | 0 | 112 | 23 | 64 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 |
| Lane Group Flow (vph) | 0 | 606 | 0 | 213 | 660 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Split | | |
| Protected Phases | | 4 | | 3 | 8 | | | | | 6 | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Effective Green, g (s) | | 36.0 | | 49.0 | 49.0 | | | | | | 27.0 | |
| Actuated g/C Ratio | | 0.42 | | 0.58 | 0.58 | | | | | | 0.32 | |
| Clearance Time (s) | | 3.0 | | 4.0 | 4.0 | | | | | | 5.0 | |
| Lane Grp Cap (vph) | | 1327 | | 445 | 1850 | | | | | | 976 | |
| v/s Ratio Prot | | 0.19 | | c0.06 | 0.21 | | | | | | c0.05 | |
| v/s Ratio Perm | | | | c0.22 | | | | | | | | |
| v/c Ratio | | 0.46 | | 0.48 | 0.36 | | | | | | 0.16 | |
| Uniform Delay, d1 | | 17.5 | | 16.3 | 9.6 | | | | | | 20.8 | |
| Progression Factor | | 1.00 | | 0.49 | 0.41 | | | | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | | 3.1 | 0.5 | | | | | | 0.3 | |
| Delay (s) | | 18.6 | | 11.0 | 4.4 | | | | | | 21.2 | |
| Level of Service | | B | | B | A | | | | | | C | |
| Approach Delay (s) | | 18.6 | | | 6.0 | | | 0.0 | | | 21.2 | |
| Approach LOS | | B | | | A | | | A | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 12.4 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.35 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | | 9.0 | | |
| Intersection Capacity Utilization | | | 46.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1047: 115th Street & Ashland Avenue

















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   | | |    | | | | |
| Volume (vph) | 95 | 478 | 0 | 0 | 624 | 129 | 162 | 90 | 58 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | | 0.97 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (prot) | 1660 | 3320 | | | 3127 | | | 4519 | | | | |
| Flt Permitted | 0.22 | 1.00 | | | 1.00 | | | 0.97 | | | | |
| Satd. Flow (perm) | 385 | 3320 | | | 3127 | | | 4519 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 106 | 531 | 0 | 0 | 693 | 143 | 180 | 100 | 64 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 44 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 106 | 531 | 0 | 0 | 815 | 0 | 0 | 300 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | | | | Split | | | | | |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 2 | | | | |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Effective Green, g (s) | 48.0 | 48.0 | | | 35.0 | | | 27.0 | | | | |
| Actuated g/C Ratio | 0.56 | 0.56 | | | 0.41 | | | 0.32 | | | | |
| Clearance Time (s) | 5.0 | 5.0 | | | 3.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 367 | 1875 | | | 1288 | | | 1435 | | | | |
| v/s Ratio Prot | 0.03 | c0.16 | | | c0.26 | | | c0.07 | | | | |
| v/s Ratio Perm | 0.13 | | | | | | | | | | | |
| v/c Ratio | 0.29 | 0.28 | | | 0.63 | | | 0.21 | | | | |
| Uniform Delay, d1 | 18.1 | 9.6 | | | 19.9 | | | 21.2 | | | | |
| Progression Factor | 0.41 | 0.33 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | 1.8 | 0.4 | | | 2.4 | | | 0.3 | | | | |
| Delay (s) | 9.3 | 3.5 | | | 22.3 | | | 21.5 | | | | |
| Level of Service | A | A | | | C | | | C | | | | |
| Approach Delay (s) | | 4.4 | | | 22.3 | | | 21.5 | | | 0.0 | |
| Approach LOS | | A | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 15.9 | | HCM Level of Service | | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.41 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | Sum of lost time (s) | | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 46.5% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1048: 115th Street & Racine Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 114 | 342 | 126 | 79 | 366 | 79 | 178 | 78 | 27 | 30 | 87 | 144 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 12 | 15 | 12 | 12 | 15 | 12 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 0.95 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | | 0.99 | | | 0.93 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.97 | | | 0.99 | |
| Satd. Flow (prot) | | 2969 | | | 3006 | | | 1840 | | | 1769 | |
| Flt Permitted | | 0.68 | | | 0.72 | | | 0.65 | | | 0.94 | |
| Satd. Flow (perm) | | 2025 | | | 2179 | | | 1242 | | | 1676 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 127 | 380 | 140 | 88 | 407 | 88 | 198 | 87 | 30 | 33 | 97 | 160 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 22 | 0 | 0 | 6 | 0 | 0 | 68 | 0 |
| Lane Group Flow (vph) | 0 | 608 | 0 | 0 | 561 | 0 | 0 | 309 | 0 | 0 | 222 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Effective Green, g (s) | | 23.0 | | | 23.0 | | | 32.0 | | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | | | 0.35 | | | 0.49 | | | 0.49 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 717 | | | 771 | | | 611 | | | 825 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.30 | | | 0.26 | | | c0.25 | | | 0.13 | |
| v/c Ratio | | 0.85 | | | 0.73 | | | 0.51 | | | 0.27 | |
| Uniform Delay, d1 | | 19.4 | | | 18.3 | | | 11.2 | | | 9.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 11.9 | | | 5.9 | | | 3.0 | | | 0.8 | |
| Delay (s) | | 31.3 | | | 24.2 | | | 14.1 | | | 10.5 | |
| Level of Service | | C | | | C | | | B | | | B | |
| Approach Delay (s) | | 31.3 | | | 24.2 | | | 14.1 | | | 10.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 22.8 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 82.5% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1049: 115th Street & Halsted Street





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 106 | 201 | 100 | 203 | 311 | 65 | 174 | 589 | 246 | 95 | 953 | 146 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 12 | 10 | 16 | 12 | 9 | 10 | 9 | 9 | 10 | 9 |
| Total Lost time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1559 | 2967 | | 1574 | 3683 | | 1508 | 3069 | 1333 | 1521 | 3099 | 1336 |
| Flt Permitted | 0.45 | 1.00 | | 0.52 | 1.00 | | 0.13 | 1.00 | 1.00 | 0.31 | 1.00 | 1.00 |
| Satd. Flow (perm) | 739 | 2967 | | 862 | 3683 | | 212 | 3069 | 1333 | 490 | 3099 | 1336 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 112 | 212 | 105 | 214 | 327 | 68 | 183 | 620 | 259 | 100 | 1003 | 154 |
| RTOR Reduction (vph) | 0 | 70 | 0 | 0 | 21 | 0 | 0 | 0 | 165 | 0 | 0 | 98 |
| Lane Group Flow (vph) | 112 | 247 | 0 | 214 | 374 | 0 | 183 | 620 | 94 | 100 | 1003 | 56 |
| Confl. Peds. (#/hr) | 19 | | 16 | 16 | | 19 | 22 | | 25 | 25 | | 22 |
| Heavy Vehicles (%) | 2% | 2% | 0% | 1% | 2% | 2% | 2% | 4% | 0% | 1% | 3% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 32.0 | 27.0 | | 32.0 | 27.0 | | 38.0 | 31.0 | 31.0 | 38.0 | 31.0 | 31.0 |
| Effective Green, g (s) | 30.0 | 28.0 | | 30.0 | 28.0 | | 36.0 | 31.0 | 31.0 | 36.0 | 31.0 | 31.0 |
| Actuated g/C Ratio | 0.35 | 0.33 | | 0.35 | 0.33 | | 0.42 | 0.36 | 0.36 | 0.42 | 0.36 | 0.36 |
| Clearance Time (s) | 3.0 | 5.0 | | 3.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 977 | | 338 | 1213 | | 181 | 1119 | 486 | 280 | 1130 | 487 |
| v/s Ratio Prot | 0.02 | 0.08 | | c0.03 | 0.10 | | c0.07 | 0.20 | | 0.03 | 0.32 | |
| v/s Ratio Perm | 0.11 | | | c0.19 | | | c0.36 | | 0.07 | 0.13 | | 0.04 |
| v/c Ratio | 0.37 | 0.25 | | 0.63 | 0.31 | | 1.01 | 0.55 | 0.19 | 0.36 | 0.89 | 0.12 |
| Uniform Delay, d1 | 19.4 | 20.8 | | 22.2 | 21.3 | | 20.7 | 21.5 | 18.5 | 15.6 | 25.4 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.41 | 1.05 | 2.36 |
| Incremental Delay, d2 | 3.6 | 0.6 | | 8.7 | 0.7 | | 69.8 | 2.0 | 0.9 | 2.6 | 8.0 | 0.4 |
| Delay (s) | 23.0 | 21.5 | | 30.9 | 21.9 | | 90.5 | 23.5 | 19.4 | 24.6 | 34.6 | 42.7 |
| Level of Service | C | C | | C | C | | F | C | B | C | C | D |
| Approach Delay (s) | | 21.9 | | | 25.1 | | | 34.0 | | | 34.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.1 | | | HCM Level of Service | | | C | | | |
| HCM Volume to Capacity ratio | | | 0.80 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | Sum of lost time (s) | | | 16.0 | | | |
| Intersection Capacity Utilization | | | 76.5% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1050: 115th Street & Wentworth Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 97 | 424 | 30 | 33 | 425 | 24 | 33 | 100 | 41 | 36 | 124 | 76 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1957 | 1466 | | 1994 | 1480 | | 2015 | 1506 | | 2001 | 1511 |
| Flt Permitted | | 0.72 | 1.00 | | 0.94 | 1.00 | | 0.91 | 1.00 | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1426 | 1466 | | 1888 | 1480 | | 1863 | 1506 | | 1870 | 1511 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 102 | 446 | 32 | 35 | 447 | 25 | 35 | 105 | 43 | 38 | 131 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 0 | 13 | 0 | 0 | 25 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 0 | 548 | 15 | 0 | 482 | 12 | 0 | 140 | 18 | 0 | 169 | 33 |
| Confl. Peds. (#/hr) | 11 | | 20 | 20 | | 11 | 1 | | 4 | 4 | | 1 |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 4% | 3% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Effective Green, g (s) | | 30.0 | 30.0 | | 30.0 | 30.0 | | 27.0 | 27.0 | | 27.0 | 27.0 |
| Actuated g/C Ratio | | 0.46 | 0.46 | | 0.46 | 0.46 | | 0.42 | 0.42 | | 0.42 | 0.42 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | 658 | 677 | | 871 | 683 | | 774 | 626 | | 777 | 628 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.38 | 0.01 | | 0.26 | 0.01 | | 0.08 | 0.01 | | c0.09 | 0.02 |
| v/c Ratio | | 0.83 | 0.02 | | 0.55 | 0.02 | | 0.18 | 0.03 | | 0.22 | 0.05 |
| Uniform Delay, d1 | | 15.3 | 9.5 | | 12.7 | 9.5 | | 12.0 | 11.2 | | 12.2 | 11.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.62 | 0.53 | | 0.91 | 1.11 | | 1.02 | 0.92 |
| Incremental Delay, d2 | | 11.8 | 0.1 | | 2.5 | 0.0 | | 0.5 | 0.1 | | 0.6 | 0.2 |
| Delay (s) | | 27.1 | 9.6 | | 10.3 | 5.1 | | 11.4 | 12.5 | | 13.1 | 10.6 |
| Level of Service | | C | A | | B | A | | B | B | | B | B |
| Approach Delay (s) | | 26.1 | | | 10.0 | | | 11.7 | | | 12.3 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.7 | | | HCM Level of Service | | | B | | | | |
| HCM Volume to Capacity ratio | | 0.54 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | | |
| Intersection Capacity Utilization | | 94.8% | | | ICU Level of Service | | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1051: 115th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 115 | 394 | 20 | 41 | 271 | 31 | 10 | 109 | 21 | 110 | 214 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1550 | 3077 | | 1550 | 3052 | | 1550 | 3025 | | 1550 | 2979 | |
| Flt Permitted | 0.95 | 1.00 | | 0.49 | 1.00 | | 0.54 | 1.00 | | 0.66 | 1.00 | |
| Satd. Flow (perm) | 1550 | 3077 | | 795 | 3052 | | 878 | 3025 | | 1078 | 2979 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 128 | 438 | 22 | 46 | 301 | 34 | 11 | 121 | 23 | 122 | 238 | 83 |
| RTOR Reduction (vph) | 0 | 6 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 49 | 0 |
| Lane Group Flow (vph) | 128 | 454 | 0 | 46 | 322 | 0 | 11 | 131 | 0 | 122 | 272 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Prot | | | Perm | | | Perm | | | Perm | | |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 7.0 | 32.0 | | 22.0 | 22.0 | | 27.0 | 27.0 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.11 | 0.49 | | 0.34 | 0.34 | | 0.42 | 0.42 | | 0.42 | 0.42 | |
| Clearance Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 167 | 1515 | | 269 | 1033 | | 365 | 1257 | | 448 | 1237 | |
| v/s Ratio Prot | c0.08 | c0.15 | | | 0.11 | | | 0.04 | | | 0.09 | |
| v/s Ratio Perm | | | | 0.06 | | | 0.01 | | | c0.11 | | |
| v/c Ratio | 0.77 | 0.30 | | 0.17 | 0.31 | | 0.03 | 0.10 | | 0.27 | 0.22 | |
| Uniform Delay, d1 | 28.2 | 9.8 | | 15.1 | 15.9 | | 11.2 | 11.6 | | 12.5 | 12.2 | |
| Progression Factor | 1.17 | 0.39 | | 0.75 | 0.72 | | 1.05 | 1.16 | | 1.12 | 1.13 | |
| Incremental Delay, d2 | 22.1 | 0.4 | | 1.3 | 0.8 | | 0.1 | 0.1 | | 1.5 | 0.4 | |
| Delay (s) | 55.0 | 4.2 | | 12.6 | 12.2 | | 12.0 | 13.6 | | 15.5 | 14.2 | |
| Level of Service | D | A | | B | B | | B | B | | B | B | |
| Approach Delay (s) | | 15.3 | | | 12.3 | | | 13.4 | | | 14.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 14.1 | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | | 0.34 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 6.0 | | | |
| Intersection Capacity Utilization | | | 41.1% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1052: 115th Street & Michigan Avenue
















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  | |
| Volume (vph) | 84 | 336 | 69 | 203 | 347 | 63 | 25 | 245 | 20 | 55 | 270 | 55 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | | 0.95 | | | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.98 | | | 0.99 | | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | 1550 | 3019 | | 1550 | 3028 | | | 3272 | | | 3225 | |
| Flt Permitted | 0.49 | 1.00 | | 0.95 | 1.00 | | | 0.90 | | | 0.86 | |
| Satd. Flow (perm) | 798 | 3019 | | 1550 | 3028 | | | 2966 | | | 2803 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 93 | 373 | 77 | 226 | 386 | 70 | 28 | 272 | 22 | 61 | 300 | 61 |
| RTOR Reduction (vph) | 0 | 26 | 0 | 0 | 23 | 0 | 0 | 8 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 93 | 424 | 0 | 226 | 433 | 0 | 0 | 314 | 0 | 0 | 401 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Prot | | | Perm | | | Perm | | |
| Protected Phases | 4 | | | 3 | | | 2 | | | 6 | | |
| Permitted Phases | 4 | | | | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Effective Green, g (s) | 20.0 | 20.0 | | 6.0 | 29.0 | | | 25.0 | | | 25.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.09 | 0.45 | | | 0.38 | | | 0.38 | |
| Clearance Time (s) | 4.0 | 4.0 | | 3.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Grp Cap (vph) | 246 | 929 | | 143 | 1351 | | | 1141 | | | 1078 | |
| v/s Ratio Prot | c0.14 | | | c0.15 | | | 0.14 | | | | | |
| v/s Ratio Perm | 0.12 | | | | | | 0.11 | | | c0.14 | | |
| v/c Ratio | 0.38 | 0.46 | | 1.58 | 0.32 | | | 0.28 | | | 0.37 | |
| Uniform Delay, d1 | 17.6 | 18.1 | | 29.5 | 11.6 | | | 13.8 | | | 14.4 | |
| Progression Factor | 0.85 | 0.80 | | 1.28 | 1.15 | | | 0.96 | | | 0.67 | |
| Incremental Delay, d2 | 4.3 | 1.6 | | 277.2 | 0.3 | | | 0.6 | | | 1.0 | |
| Delay (s) | 19.2 | 16.0 | | 314.9 | 13.7 | | | 13.8 | | | 10.6 | |
| Level of Service | B | B | | F | B | | | B | | | B | |
| Approach Delay (s) | 16.6 | | | 113.5 | | | 13.8 | | | 10.6 | | |
| Approach LOS | B | | | F | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 48.4 | | HCM Level of Service | | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | Sum of lost time (s) | | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 57.3% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1053: 115th Street & Indiana Avenue

1/14/2013





| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | | | |
| Volume (vph) | 16 | 355 | 26 | 75 | 620 | 75 | 55 | 110 | 165 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 14 | 12 | 10 | 15 | 10 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | | |
| Frt | | 0.99 | | | 0.99 | | | 0.93 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 1613 | | | 1602 | | | 3249 | | | | |
| Flt Permitted | | 0.96 | | | 0.92 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 1557 | | | 1484 | | | 3249 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 18 | 394 | 29 | 83 | 689 | 83 | 61 | 122 | 183 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 438 | 0 | 0 | 850 | 0 | 0 | 227 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Perm | | | | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | | | |
| Actuated Green, G (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Effective Green, g (s) | | 41.5 | | | 41.5 | | | 15.5 | | | | |
| Actuated g/C Ratio | | 0.64 | | | 0.64 | | | 0.24 | | | | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 8.0 | | | | |
| Lane Grp Cap (vph) | | 994 | | | 947 | | | 775 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.28 | | | 0.57 | | | 0.07 | | | | |
| v/c Ratio | | 0.44 | | | 0.90 | | | 0.29 | | | | |
| Uniform Delay, d1 | | 5.9 | | | 9.9 | | | 20.3 | | | | |
| Progression Factor | | 1.98 | | | 1.00 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 1.3 | | | 13.0 | | | 0.9 | | | | |
| Delay (s) | | 13.0 | | | 22.9 | | | 21.2 | | | | |
| Level of Service | | B | | | C | | | C | | | | |
| Approach Delay (s) | | 13.0 | | | 22.9 | | | 21.2 | | | 0.0 | |
| Approach LOS | | B | | | C | | | C | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.9 | | | HCM Level of Service | | | B | | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | Sum of lost time (s) | | | 8.0 | | | |
| Intersection Capacity Utilization | | | 86.4% | | | ICU Level of Service | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1054: 115th Street & Martin Luther King Jr Drive

1/14/2013

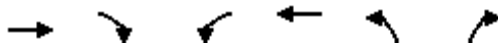


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|---|---|------|---|---|
| Lane Configurations | |  |  | |  |  |
| Volume (veh/h) | 93 | 415 | 598 | 39 | 119 | 164 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 98 | 437 | 629 | 41 | 125 | 173 |
| Pedestrians | | 5 | 6 | | 17 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 10.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 0 | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 1319 | 491 | | | |
| pX, platoon unblocked | 0.85 | | | | 0.85 | 0.85 |
| vC, conflicting volume | 688 | | | | 1306 | 672 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 540 | | | | 1270 | 522 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 88 | | | | 9 | 63 |
| cM capacity (veh/h) | 848 | | | | 138 | 465 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 | | |
| Volume Total | 535 | 671 | 125 | 173 | | |
| Volume Left | 98 | 0 | 125 | 0 | | |
| Volume Right | 0 | 41 | 0 | 173 | | |
| cSH | 848 | 1700 | 138 | 465 | | |
| Volume to Capacity | 0.12 | 0.39 | 0.91 | 0.37 | | |
| Queue Length 95th (ft) | 10 | 0 | 153 | 42 | | |
| Control Delay (s) | 3.0 | 0.0 | 115.9 | 17.2 | | |
| Lane LOS | A | | F | C | | |
| Approach Delay (s) | 3.0 | 0.0 | 58.7 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 12.7 | | | |
| Intersection Capacity Utilization | | | 82.2% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1055: 115th Street & Cottage Grove Avenue

1/14/2013



















| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|-------|------|----------------------|------|
| Lane Configurations | ↩ | | | ↩ | ↩ | ↩ |
| Volume (vph) | 690 | 0 | 1 | 619 | 3 | 29 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 3.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 1.00 | | | 1.00 | 0.88 | |
| Flt Protected | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (prot) | 1748 | | | 1747 | 1525 | |
| Flt Permitted | 1.00 | | | 1.00 | 1.00 | |
| Satd. Flow (perm) | 1748 | | | 1747 | 1525 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 767 | 0 | 1 | 688 | 3 | 32 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 |
| Lane Group Flow (vph) | 767 | 0 | 0 | 689 | 8 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | 1 2 4 | | | 4 | 3 | |
| Permitted Phases | | | 4 | | | |
| Actuated Green, G (s) | 68.4 | | | 38.4 | 13.6 | |
| Effective Green, g (s) | 64.4 | | | 38.4 | 13.6 | |
| Actuated g/C Ratio | 0.72 | | | 0.43 | 0.15 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | |
| Vehicle Extension (s) | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1251 | | | 745 | 230 | |
| v/s Ratio Prot | c0.44 | | | | c0.01 | |
| v/s Ratio Perm | | | | 0.39 | | |
| v/c Ratio | 0.61 | | | 0.92 | 0.03 | |
| Uniform Delay, d1 | 6.5 | | | 24.4 | 32.6 | |
| Progression Factor | 0.05 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.5 | | | 19.0 | 0.1 | |
| Delay (s) | 0.9 | | | 43.5 | 32.7 | |
| Level of Service | A | | | D | C | |
| Approach Delay (s) | 0.9 | | | 43.5 | 32.7 | |
| Approach LOS | A | | | D | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 21.3 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.66 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 48.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1056: 115th Street & Bishop Ford Fwy

1/14/2013

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | | | | |  |  |
| Volume (veh/h) | 0 | 243 | 606 | 32 | 407 | 0 | 0 | 0 | 0 | 17 | 6 | 248 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 0 | 270 | 673 | 36 | 452 | 0 | 0 | 0 | 0 | 19 | 7 | 276 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 452 | | | 270 | | | 1133 | 1130 | 472 | 658 | 793 | 452 |
| tC, single (s) | 4.1 | | | 4.2 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 97 | | | 100 | 100 | 100 | 95 | 98 | 50 |
| cM capacity (veh/h) | 1119 | | | 1276 | | | 78 | 200 | 544 | 346 | 314 | 555 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 180 | 763 | 488 | 26 | 276 | | | | | | | |
| Volume Left | 0 | 0 | 36 | 19 | 0 | | | | | | | |
| Volume Right | 0 | 673 | 0 | 0 | 276 | | | | | | | |
| cSH | 1700 | 1700 | 1276 | 337 | 555 | | | | | | | |
| Volume to Capacity | 0.11 | 0.45 | 0.03 | 0.08 | 0.50 | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | 6 | 69 | | | | | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.9 | 16.6 | 17.7 | | | | | | | |
| Lane LOS | | | A | C | C | | | | | | | |
| Approach Delay (s) | 0.0 | | 0.9 | 17.6 | | | | | | | | |
| Approach LOS | | | | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.5% | | ICU Level of Service | | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1057: 115th Street &

1/14/2013



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | RT | | RT | | | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 260 | 0 | 439 | 0 | 0 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 289 | 0 | 488 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | | | |
| Volume Total (vph) | 144 | 144 | 488 | | | |
| Volume Left (vph) | 144 | 144 | 488 | | | |
| Volume Right (vph) | 0 | 0 | 0 | | | |
| Hadj (s) | 0.55 | 0.55 | 0.25 | | | |
| Departure Headway (s) | 6.4 | 6.4 | 5.0 | | | |
| Degree Utilization, x | 0.26 | 0.26 | 0.68 | | | |
| Capacity (veh/h) | 536 | 537 | 701 | | | |
| Control Delay (s) | 10.3 | 10.3 | 17.7 | | | |
| Approach Delay (s) | 10.3 | | 17.7 | | | |
| Approach LOS | B | | C | | | |
| Intersection Summary | | | | | | |
| Delay | | | 15.0 | | | |
| HCM Level of Service | | | B | | | |
| Intersection Capacity Utilization | | | 40.2% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Signalized Intersection Capacity Analysis

1058: 119th Street & Marshfield Avenue

1/14/2013


























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|----------|----------|----------------------|------|------|------|-------|-------|--------|
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | | | | | ↑ | ↑↑↑ | ↑ |
| Volume (vph) | 0 | 553 | 345 | 332 | 869 | 0 | 0 | 0 | 0 | 303 | 269 | 372 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 13 | 12 | 12 | 12 | 12 | 10 | 10 | 11 |
| Total Lost time (s) | | 6.0 | 6.0 | | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.95 | 1.00 | | 0.95 | | | | | 0.86 | 0.81 | 0.86 |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | | | | | 1.00 | 0.95 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (prot) | | 3179 | 1228 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Flt Permitted | | 1.00 | 1.00 | | 0.99 | | | | | 0.95 | 0.99 | 1.00 |
| Satd. Flow (perm) | | 3179 | 1228 | | 3427 | | | | | 1359 | 3807 | 1133 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 582 | 363 | 349 | 915 | 0 | 0 | 0 | 0 | 319 | 283 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 96 |
| Lane Group Flow (vph) | 0 | 582 | 155 | 0 | 1264 | 0 | 0 | 0 | 0 | 175 | 571 | 100 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | | | | | | |
| Heavy Vehicles (%) | 0% | 4% | 6% | 1% | 2% | 0% | 0% | 0% | 0% | 1% | 1% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | 0 |
| Turn Type | | Perm | | Split | | | | | | Split | | custom |
| Protected Phases | | 2 | | 10 12 14 | 10 12 14 | | | | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | | | | 4 2 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 75.0 | | | | | 31.7 | 31.7 | 64.7 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 75.0 | | | | | 31.7 | 31.7 | 64.7 |
| Actuated g/C Ratio | | 0.17 | 0.17 | | 0.47 | | | | | 0.20 | 0.20 | 0.40 |
| Clearance Time (s) | | 6.0 | 6.0 | | | | | | | 6.0 | 6.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 536 | 207 | | 1606 | | | | | 269 | 754 | 458 |
| v/s Ratio Prot | | c0.18 | | | c0.37 | | | | | 0.13 | c0.15 | |
| v/s Ratio Perm | | | 0.13 | | | | | | | | | 0.09 |
| v/c Ratio | | 1.09 | 0.75 | | 0.79 | | | | | 0.65 | 0.76 | 0.22 |
| Uniform Delay, d1 | | 66.5 | 63.3 | | 35.8 | | | | | 59.1 | 60.5 | 31.1 |
| Progression Factor | | 1.00 | 1.00 | | 0.12 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 64.2 | 21.8 | | 0.2 | | | | | 5.5 | 4.4 | 0.2 |
| Delay (s) | | 130.7 | 85.1 | | 4.6 | | | | | 64.6 | 64.9 | 31.4 |
| Level of Service | | F | F | | A | | | | | E | E | C |
| Approach Delay (s) | | 113.2 | | | 4.6 | | | 0.0 | | | 58.2 | |
| Approach LOS | | F | | | A | | | A | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 53.3 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.85 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | | 28.3 | | |
| Intersection Capacity Utilization | | | 84.9% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1059: 119th Street & Ashland Avenue























1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|--|---|---|--|---|---|--|--|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | | |   |  |  |   |   | | | |
| Volume (vph) | 292 | 564 | 0 | 0 | 869 | 233 | 332 | 214 | 211 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 13 | 12 | 12 | 11 | 12 | 13 | 13 | 14 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | 1.00 | 0.91 | 0.91 | | | | |
| Frt | 1.00 | 1.00 | | | 1.00 | 0.85 | 1.00 | 0.94 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (prot) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3056 | | | | |
| Flt Permitted | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 0.99 | | | | |
| Satd. Flow (perm) | 1605 | 3431 | | | 3210 | 1485 | 1561 | 3056 | | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 324 | 627 | 0 | 0 | 966 | 259 | 369 | 238 | 234 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 75 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 324 | 627 | 0 | 0 | 966 | 165 | 288 | 478 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Split | | | | | Perm | | Split | | | | |
| Protected Phases | 2 4 8 | 2 4 8 | | | 10 | | 12 | 12 | | | | |
| Permitted Phases | | | | | | 10 | | | | | | |
| Actuated Green, G (s) | 77.0 | 77.0 | | | 35.0 | 35.0 | 22.0 | 22.0 | | | | |
| Effective Green, g (s) | 77.0 | 77.0 | | | 35.0 | 35.0 | 22.0 | 22.0 | | | | |
| Actuated g/C Ratio | 0.48 | 0.48 | | | 0.22 | 0.22 | 0.14 | 0.14 | | | | |
| Clearance Time (s) | | | | | 6.0 | 6.0 | 6.0 | 6.0 | | | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Lane Grp Cap (vph) | 772 | 1651 | | | 702 | 325 | 215 | 420 | | | | |
| v/s Ratio Prot | c0.20 | 0.18 | | | c0.30 | | c0.18 | 0.16 | | | | |
| v/s Ratio Perm | | | | | | 0.11 | | | | | | |
| v/c Ratio | 0.42 | 0.38 | | | 1.38 | 0.51 | 1.34 | 1.14 | | | | |
| Uniform Delay, d1 | 27.0 | 26.3 | | | 62.5 | 54.9 | 69.0 | 69.0 | | | | |
| Progression Factor | 0.05 | 0.06 | | | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Incremental Delay, d2 | 0.2 | 0.1 | | | 178.1 | 1.3 | 180.7 | 87.3 | | | | |
| Delay (s) | 1.6 | 1.5 | | | 240.6 | 56.2 | 249.7 | 156.3 | | | | |
| Level of Service | A | A | | | F | E | F | F | | | | |
| Approach Delay (s) | | 1.6 | | | 201.6 | | | 188.3 | | | 0.0 | |
| Approach LOS | | A | | | F | | | F | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 134.8 | | | HCM Level of Service | | | F | | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 160.0 | | | Sum of lost time (s) | | | 28.0 | | | |
| Intersection Capacity Utilization | | | 73.1% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1060: 119th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  |  |
| Volume (vph) | 140 | 506 | 136 | 89 | 270 | 67 | 108 | 522 | 70 | 96 | 1150 | 120 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 14 | 12 | 10 | 10 | 12 | 9 | 10 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1576 | 1600 | 1373 | 1596 | 1790 | | 1580 | 3016 | | 1537 | 3030 | |
| Flt Permitted | 0.27 | 1.00 | 1.00 | 0.12 | 1.00 | | 0.08 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 452 | 1600 | 1373 | 194 | 1790 | | 133 | 3016 | | 513 | 3030 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 147 | 533 | 143 | 94 | 284 | 71 | 114 | 549 | 74 | 101 | 1211 | 126 |
| RTOR Reduction (vph) | 0 | 0 | 88 | 0 | 8 | 0 | 0 | 9 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 147 | 533 | 55 | 94 | 347 | 0 | 114 | 614 | 0 | 101 | 1330 | 0 |
| Confl. Peds. (#/hr) | 28 | | 8 | 8 | | 28 | 59 | | 11 | 11 | | 59 |
| Confl. Bikes (#/hr) | 3 | | | | | 3 | 1 | | 2 | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 5% | 2% | 0% | 4% | 0% | 1% | 4% | 0% | 0% | 3% | 3% |
| Turn Type | pm+pt | | Perm | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 49.0 | 39.0 | 39.0 | 42.6 | 35.6 | | 58.2 | 51.2 | | 59.8 | 52.0 | |
| Effective Green, g (s) | 47.4 | 40.0 | 39.0 | 40.6 | 35.6 | | 56.2 | 51.2 | | 57.8 | 52.0 | |
| Actuated g/C Ratio | 0.39 | 0.33 | 0.32 | 0.34 | 0.30 | | 0.47 | 0.43 | | 0.48 | 0.43 | |
| Clearance Time (s) | 3.0 | 5.0 | 5.0 | 3.0 | 5.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 267 | 533 | 446 | 136 | 531 | | 135 | 1287 | | 305 | 1313 | |
| v/s Ratio Prot | c0.04 | c0.33 | | c0.03 | 0.19 | | c0.04 | 0.20 | | 0.02 | c0.44 | |
| v/s Ratio Perm | 0.17 | | 0.04 | 0.20 | | | 0.36 | | | 0.14 | | |
| v/c Ratio | 0.55 | 1.00 | 0.12 | 0.69 | 0.65 | | 0.84 | 0.48 | | 0.33 | 1.01 | |
| Uniform Delay, d1 | 26.0 | 40.0 | 28.5 | 31.2 | 36.8 | | 26.1 | 24.8 | | 18.0 | 34.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.4 | 39.0 | 0.6 | 14.1 | 6.2 | | 35.7 | 1.3 | | 0.6 | 28.1 | |
| Delay (s) | 28.5 | 79.0 | 29.0 | 45.3 | 43.0 | | 61.8 | 26.0 | | 18.6 | 62.1 | |
| Level of Service | C | E | C | D | D | | E | C | | B | E | |
| Approach Delay (s) | | 61.3 | | | 43.5 | | | 31.6 | | | 59.1 | |
| Approach LOS | | E | | | D | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 51.7 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.95 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 120.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 91.6% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1061: 119th Street & Wentworth Avenue

1/14/2013



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Volume (vph) | 88 | 462 | 111 | 13 | 334 | 22 | 49 | 59 | 19 | 21 | 91 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.94 | |
| Flt Protected | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.99 | |
| Satd. Flow (prot) | | 1963 | 1467 | | 1629 | 1381 | | 1892 | | | 1857 | |
| Flt Permitted | | 0.89 | 1.00 | | 0.98 | 1.00 | | 0.86 | | | 0.97 | |
| Satd. Flow (perm) | | 1760 | 1467 | | 1598 | 1381 | | 1649 | | | 1813 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 93 | 486 | 117 | 14 | 352 | 23 | 52 | 62 | 20 | 22 | 96 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 45 | 0 | 0 | 12 | 0 | 10 | 0 | 0 | 40 | 0 |
| Lane Group Flow (vph) | 0 | 579 | 72 | 0 | 366 | 11 | 0 | 124 | 0 | 0 | 164 | 0 |
| Confl. Peds. (#/hr) | 12 | | 20 | 20 | | 12 | 8 | | 2 | 2 | | 8 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 3% | 3% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 1% | 3% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Effective Green, g (s) | | 32.0 | 32.0 | | 32.0 | 32.0 | | 27.0 | | | 27.0 | |
| Actuated g/C Ratio | | 0.49 | 0.49 | | 0.49 | 0.49 | | 0.42 | | | 0.42 | |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 866 | 722 | | 787 | 680 | | 685 | | | 753 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.33 | 0.05 | | 0.23 | 0.01 | | 0.08 | | | c0.09 | |
| v/c Ratio | | 0.67 | 0.10 | | 0.47 | 0.02 | | 0.18 | | | 0.22 | |
| Uniform Delay, d1 | | 12.5 | 8.8 | | 10.9 | 8.4 | | 12.0 | | | 12.2 | |
| Progression Factor | | 1.00 | 1.00 | | 1.88 | 3.14 | | 1.00 | | | 1.98 | |
| Incremental Delay, d2 | | 4.1 | 0.3 | | 1.9 | 0.0 | | 0.6 | | | 0.7 | |
| Delay (s) | | 16.6 | 9.1 | | 22.3 | 26.5 | | 12.6 | | | 24.8 | |
| Level of Service | | B | A | | C | C | | B | | | C | |
| Approach Delay (s) | | 15.3 | | | 22.5 | | | 12.6 | | | 24.8 | |
| Approach LOS | | B | | | C | | | B | | | C | |

Intersection Summary





















| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 18.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.46 | | |
| Actuated Cycle Length (s) | 65.0 | Sum of lost time (s) | 6.0 |
| Intersection Capacity Utilization | 78.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1062: 119th Street & State Street



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Volume (vph) | 108 | 244 | 91 | 11 | 226 | 10 | 48 | 114 | 19 | 15 | 184 | 82 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 0.94 | | 1.00 | 0.97 | | 1.00 | 0.97 | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | |
| Flt Protected | | 0.98 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | |
| Satd. Flow (prot) | | 1743 | 1443 | | 1728 | 1487 | | 1712 | 1489 | | 1703 | |
| Flt Permitted | | 0.78 | 1.00 | | 0.98 | 1.00 | | 0.85 | 1.00 | | 0.98 | |
| Satd. Flow (perm) | | 1387 | 1443 | | 1692 | 1487 | | 1481 | 1489 | | 1680 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 114 | 257 | 96 | 12 | 238 | 11 | 51 | 120 | 20 | 16 | 194 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 58 | 0 | 0 | 7 | 0 | 0 | 10 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 0 | 371 | 38 | 0 | 250 | 4 | 0 | 171 | 10 | 0 | 273 | 0 |
| Confl. Peds. (#/hr) | 19 | | 25 | 25 | | 19 | 3 | | 6 | 6 | | 3 |
| Confl. Bikes (#/hr) | 1 | | 2 | 2 | | 1 | | | 1 | 1 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 4% | 0% | 0% | 5% | 0% | 0% | 0% | 2% |
| Turn Type | Perm | | Perm | Perm | | Perm | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Effective Green, g (s) | | 23.0 | 23.0 | | 23.0 | 23.0 | | 32.0 | 32.0 | | 32.0 | |
| Actuated g/C Ratio | | 0.35 | 0.35 | | 0.35 | 0.35 | | 0.49 | 0.49 | | 0.49 | |
| Clearance Time (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | |
| Lane Grp Cap (vph) | | 491 | 511 | | 599 | 526 | | 729 | 733 | | 827 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.03 | | 0.15 | 0.00 | | 0.12 | 0.01 | | c0.16 | |
| v/c Ratio | | 0.76 | 0.08 | | 0.42 | 0.01 | | 0.23 | 0.01 | | 0.33 | |
| Uniform Delay, d1 | | 18.5 | 13.9 | | 15.9 | 13.6 | | 9.5 | 8.4 | | 10.0 | |
| Progression Factor | | 1.79 | 3.63 | | 0.93 | 0.93 | | 1.00 | 1.00 | | 1.04 | |
| Incremental Delay, d2 | | 8.1 | 0.2 | | 2.1 | 0.0 | | 0.8 | 0.0 | | 1.1 | |
| Delay (s) | | 41.3 | 50.8 | | 16.9 | 12.7 | | 10.2 | 8.5 | | 11.5 | |
| Level of Service | | D | D | | B | B | | B | A | | B | |
| Approach Delay (s) | | 43.2 | | | 16.7 | | | 10.0 | | | 11.5 | |
| Approach LOS | | D | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 24.6 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 0.51 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 65.0 | | | Sum of lost time (s) | | | 10.0 | | | | |
| Intersection Capacity Utilization | | 72.0% | | | ICU Level of Service | | | C | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1063: 119th Street & Michigan Avenue













1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Volume (vph) | 167 | 45 | 96 | 8 | 16 | 9 | 43 | 225 | 8 | 21 | 481 | 209 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 14 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 0.95 | | 0.99 | | | 1.00 | | | 1.00 | 0.94 |
| Flpb, ped/bikes | | 0.98 | 1.00 | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.85 | | 0.96 | | | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | | 0.99 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1873 | 1440 | | 1782 | | | 1991 | | | 1976 | 1382 |
| Flt Permitted | | 0.81 | 1.00 | | 0.93 | | | 0.88 | | | 0.98 | 1.00 |
| Satd. Flow (perm) | | 1573 | 1440 | | 1686 | | | 1762 | | | 1946 | 1382 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 186 | 50 | 107 | 9 | 18 | 10 | 48 | 250 | 9 | 23 | 534 | 232 |
| RTOR Reduction (vph) | 0 | 0 | 63 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 92 |
| Lane Group Flow (vph) | 0 | 236 | 44 | 0 | 30 | 0 | 0 | 305 | 0 | 0 | 557 | 140 |
| Confl. Peds. (#/hr) | 37 | | 53 | 53 | | 37 | 39 | | 54 | 54 | | 39 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 4% | 0% | 1% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 4% |
| Turn Type | pm+pt | | Perm | Perm | | | Perm | | | Perm | | Perm |
| Protected Phases | 7 | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | 6 | | | 6 |
| Actuated Green, G (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Effective Green, g (s) | | 27.0 | 27.0 | | 17.0 | | | 32.0 | | | 32.0 | 32.0 |
| Actuated g/C Ratio | | 0.42 | 0.42 | | 0.26 | | | 0.49 | | | 0.49 | 0.49 |
| Clearance Time (s) | | 3.0 | 3.0 | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 690 | 598 | | 441 | | | 867 | | | 958 | 680 |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | 0.10 | 0.03 | | 0.02 | | | 0.17 | | | c0.29 | 0.10 |
| v/c Ratio | | 0.34 | 0.07 | | 0.07 | | | 0.35 | | | 0.58 | 0.21 |
| Uniform Delay, d1 | | 12.9 | 11.5 | | 18.0 | | | 10.1 | | | 11.7 | 9.3 |
| Progression Factor | | 1.02 | 1.87 | | 1.00 | | | 1.08 | | | 0.66 | 0.22 |
| Incremental Delay, d2 | | 1.1 | 0.2 | | 0.3 | | | 0.9 | | | 2.0 | 0.5 |
| Delay (s) | | 14.3 | 21.7 | | 18.3 | | | 11.9 | | | 9.7 | 2.6 |
| Level of Service | | B | C | | B | | | B | | | A | A |
| Approach Delay (s) | | 16.6 | | | 18.3 | | | 11.9 | | | 7.6 | |
| Approach LOS | | B | | | B | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 10.8 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 65.0 | | | | Sum of lost time (s) | | | 6.0 | | |
| Intersection Capacity Utilization | | | 72.5% | | | | ICU Level of Service | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1064: 127th Street & S Paulina St



















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | | ↑↑ | ↑↑ | | | | | ↑ | ↑↑ | ↑ |
| Volume (vph) | 0 | 922 | 289 | 675 | 1189 | 0 | 0 | 0 | 0 | 513 | 284 | 334 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 11 | 11 | 11 | 8 | 8 | 8 | 11 | 12 | 14 |
| Total Lost time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | | 0.91 | | 0.97 | 0.95 | | | | | 0.91 | 0.86 | 0.91 |
| Frpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | | 1.00 | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 1.00 |
| Frt | | 0.96 | | 1.00 | 1.00 | | | | | 1.00 | 0.98 | 0.85 |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (prot) | | 4578 | | 3144 | 3210 | | | | | 1489 | 2913 | 1442 |
| Flt Permitted | | 1.00 | | 0.12 | 1.00 | | | | | 0.95 | 0.98 | 1.00 |
| Satd. Flow (perm) | | 4578 | | 409 | 3210 | | | | | 1489 | 2913 | 1442 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 0 | 971 | 304 | 711 | 1252 | 0 | 0 | 0 | 0 | 540 | 299 | 352 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 42 |
| Lane Group Flow (vph) | 0 | 1237 | 0 | 711 | 1252 | 0 | 0 | 0 | 0 | 308 | 603 | 229 |
| Confl. Peds. (#/hr) | 15 | | 11 | 11 | | 15 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 3% | 2% | 3% | 0% | 0% | 0% | 0% | 1% | 3% | 3% |
| Turn Type | | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | | 2 | | 1 | 6 | | | | | | 4 | |
| Permitted Phases | | | | 6 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | | 49.6 | | 83.8 | 82.3 | | | | | 35.7 | 35.7 | 35.7 |
| Effective Green, g (s) | | 49.6 | | 83.8 | 82.3 | | | | | 35.7 | 35.7 | 35.7 |
| Actuated g/C Ratio | | 0.38 | | 0.64 | 0.63 | | | | | 0.27 | 0.27 | 0.27 |
| Clearance Time (s) | | 6.0 | | 4.5 | 6.0 | | | | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | | 7.0 | | 3.5 | 7.0 | | | | | 3.5 | 3.5 | 3.5 |
| Lane Grp Cap (vph) | | 1747 | | 857 | 2032 | | | | | 409 | 800 | 396 |
| v/s Ratio Prot | | 0.27 | | 0.18 | 0.39 | | | | | | | |
| v/s Ratio Perm | | | | 0.35 | | | | | | 0.21 | 0.21 | 0.16 |
| v/c Ratio | | 0.71 | | 0.83 | 0.62 | | | | | 0.75 | 0.75 | 0.58 |
| Uniform Delay, d1 | | 34.1 | | 32.4 | 14.3 | | | | | 43.1 | 43.1 | 40.7 |
| Progression Factor | | 1.00 | | 0.78 | 0.52 | | | | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 2.5 | | 3.1 | 0.6 | | | | | 7.9 | 4.2 | 2.2 |
| Delay (s) | | 36.5 | | 28.3 | 8.0 | | | | | 51.0 | 47.3 | 42.9 |
| Level of Service | | D | | C | A | | | | | D | D | D |
| Approach Delay (s) | | 36.5 | | | 15.4 | | | 0.0 | | | 47.3 | |
| Approach LOS | | D | | | B | | | A | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.79 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 10.5 | | | |
| Intersection Capacity Utilization | | | 113.7% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1065: 127th Street & Marshfield Ave

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  |  | |  |  | | | |
| Volume (vph) | 341 | 1094 | 0 | 0 | 1435 | 271 | 430 | 351 | 393 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 11 | 11 | 11 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.91 | | | 0.91 | | | | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (prot) | 1621 | 3241 | | | 4541 | | | 4492 | | | | |
| Flt Permitted | 0.06 | 1.00 | | | 1.00 | | | 0.98 | | | | |
| Satd. Flow (perm) | 106 | 3241 | | | 4541 | | | 4492 | | | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 359 | 1152 | 0 | 0 | 1511 | 285 | 453 | 369 | 414 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 70 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 359 | 1152 | 0 | 0 | 1775 | 0 | 0 | 1166 | 0 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | 7 | | 5 | 5 | | 7 | | | | | | |
| Confl. Bikes (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 0% | 0% | 2% | 1% | 2% | 1% | 3% | 0% | 0% | 0% |
| Turn Type | pm+pt | | | | | Perm | | | | | | |
| Protected Phases | 5 | 2 | | | 6 | | | 8 | | | | |
| Permitted Phases | 2 | | | | | | 8 | | | | | |
| Actuated Green, G (s) | 83.4 | 83.4 | | | 58.4 | | | 34.6 | | | | |
| Effective Green, g (s) | 83.4 | 83.4 | | | 58.4 | | | 34.6 | | | | |
| Actuated g/C Ratio | 0.64 | 0.64 | | | 0.45 | | | 0.27 | | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | | 6.0 | | | | |
| Vehicle Extension (s) | 3.5 | 7.0 | | | 7.0 | | | 5.0 | | | | |
| Lane Grp Cap (vph) | 289 | 2079 | | | 2040 | | | 1196 | | | | |
| v/s Ratio Prot | c0.18 | 0.36 | | | 0.39 | | | | | | | |
| v/s Ratio Perm | c0.61 | | | | | | | 0.26 | | | | |
| v/c Ratio | 1.24 | 0.55 | | | 0.87 | | | 0.98 | | | | |
| Uniform Delay, d1 | 43.2 | 13.0 | | | 32.4 | | | 47.3 | | | | |
| Progression Factor | 1.12 | 0.18 | | | 0.62 | | | 1.00 | | | | |
| Incremental Delay, d2 | 128.4 | 0.8 | | | 3.5 | | | 20.3 | | | | |
| Delay (s) | 176.8 | 3.1 | | | 23.6 | | | 67.6 | | | | |
| Level of Service | F | A | | | C | | | E | | | | |
| Approach Delay (s) | | 44.4 | | | 23.6 | | | 67.6 | | | 0.0 | |
| Approach LOS | | D | | | C | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 42.5 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 1.13 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 113.7% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |






















Halsted Rail Alternative Mitigated (2030) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1066: 127th Street & Ashland Avenue





















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Volume (vph) | 135 | 774 | 408 | 104 | 1197 | 100 | 227 | 179 | 66 | 85 | 162 | 121 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 11 | 12 | 11 | 12 | 12 | 10 | 10 | 13 | 10 | 10 | 10 |
| Total Lost time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.96 | | 1.00 | 0.94 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1565 | 3273 | 1312 | 1603 | 3285 | | 1578 | 3001 | | 1537 | 2938 | |
| Flt Permitted | 0.13 | 1.00 | 1.00 | 0.34 | 1.00 | | 0.34 | 1.00 | | 0.59 | 1.00 | |
| Satd. Flow (perm) | 214 | 3273 | 1312 | 581 | 3285 | | 573 | 3001 | | 959 | 2938 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 142 | 815 | 429 | 109 | 1260 | 105 | 239 | 188 | 69 | 89 | 171 | 127 |
| RTOR Reduction (vph) | 0 | 0 | 151 | 0 | 5 | 0 | 0 | 30 | 0 | 0 | 106 | 0 |
| Lane Group Flow (vph) | 142 | 815 | 278 | 109 | 1360 | 0 | 239 | 227 | 0 | 89 | 192 | 0 |
| Confl. Peds. (#/hr) | 11 | | 23 | 23 | | 11 | 8 | | 12 | 12 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | | | 1 | 1 | | |
| Heavy Vehicles (%) | 2% | 1% | 3% | 3% | 3% | 0% | 1% | 1% | 2% | 3% | 0% | 1% |
| Parking (#/hr) | | | 0 | | | | | | | | | |
| Turn Type | pm+pt | | pm+ov | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 5 | 2 | 3 | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 47.2 | 47.2 | 64.2 | 62.7 | 60.2 | | 37.9 | 27.8 | | 24.0 | 17.4 | |
| Effective Green, g (s) | 47.2 | 47.2 | 64.2 | 62.7 | 60.2 | | 37.9 | 27.8 | | 24.0 | 17.4 | |
| Actuated g/C Ratio | 0.36 | 0.36 | 0.49 | 0.48 | 0.46 | | 0.29 | 0.21 | | 0.18 | 0.13 | |
| Clearance Time (s) | 3.5 | 6.0 | 3.5 | 3.5 | 6.0 | | 3.5 | 6.0 | | 3.5 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 7.0 | 3.0 | 3.0 | 7.0 | | 3.0 | 7.0 | | 3.0 | 7.0 | |
| Lane Grp Cap (vph) | 248 | 1188 | 648 | 511 | 1521 | | 298 | 642 | | 206 | 393 | |
| v/s Ratio Prot | 0.07 | c0.25 | 0.06 | 0.05 | c0.41 | | c0.10 | 0.08 | | 0.02 | 0.07 | |
| v/s Ratio Perm | 0.14 | | 0.16 | 0.05 | | | c0.13 | | | 0.06 | | |
| v/c Ratio | 0.57 | 0.69 | 0.43 | 0.21 | 0.89 | | 0.80 | 0.35 | | 0.43 | 0.49 | |
| Uniform Delay, d1 | 32.0 | 35.1 | 21.1 | 21.4 | 32.0 | | 38.8 | 43.5 | | 45.9 | 52.2 | |
| Progression Factor | 1.15 | 1.01 | 1.43 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 7.0 | 2.4 | 0.3 | 0.2 | 8.5 | | 14.3 | 1.2 | | 1.5 | 3.4 | |
| Delay (s) | 43.8 | 37.7 | 30.5 | 21.7 | 40.5 | | 53.1 | 44.7 | | 47.3 | 55.6 | |
| Level of Service | D | D | C | C | D | | D | D | | D | E | |
| Approach Delay (s) | | 36.1 | | | 39.1 | | | 48.7 | | | 53.7 | |
| Approach LOS | | D | | | D | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.8 | | | HCM Level of Service | | | | D | | |
| HCM Volume to Capacity ratio | | | 0.83 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 130.0 | | | Sum of lost time (s) | | | | 15.5 | | |
| Intersection Capacity Utilization | | | 88.9% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1067: Vermont Street & Ashland Avenue




















1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 46 | 250 | 367 | 186 | 441 | 113 | 362 | 340 | 107 | 206 | 408 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 11 | 12 | 11 | 12 | 12 | 11 | 13 | 12 | 10 | 11 | 12 |
| Total Lost time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1707 | 2925 | | 1653 | 3267 | | 1620 | 3381 | | 1580 | 3183 | |
| Flt Permitted | 0.39 | 1.00 | | 0.18 | 1.00 | | 0.32 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 698 | 2925 | | 314 | 3267 | | 544 | 3381 | | 802 | 3183 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 48 | 263 | 386 | 196 | 464 | 119 | 381 | 358 | 113 | 217 | 429 | 59 |
| RTOR Reduction (vph) | 0 | 225 | 0 | 0 | 19 | 0 | 0 | 26 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 48 | 424 | 0 | 196 | 564 | 0 | 381 | 445 | 0 | 217 | 479 | 0 |
| Confl. Peds. (#/hr) | 12 | | 3 | 3 | | 12 | 5 | | | | | 5 |
| Heavy Vehicles (%) | 0% | 2% | 2% | 0% | 1% | 1% | 2% | 1% | 0% | 1% | 2% | 0% |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 35.5 | 28.8 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Effective Green, g (s) | 35.5 | 28.8 | | 46.8 | 36.1 | | 56.2 | 44.2 | | 40.1 | 32.1 | |
| Actuated g/C Ratio | 0.31 | 0.25 | | 0.41 | 0.31 | | 0.49 | 0.38 | | 0.35 | 0.28 | |
| Clearance Time (s) | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | | 4.0 | 6.0 | |
| Vehicle Extension (s) | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | | 3.5 | 7.0 | |
| Lane Grp Cap (vph) | 274 | 733 | | 291 | 1026 | | 454 | 1299 | | 334 | 888 | |
| v/s Ratio Prot | 0.01 | 0.15 | | c0.08 | 0.17 | | c0.15 | 0.13 | | 0.05 | 0.15 | |
| v/s Ratio Perm | 0.04 | | | c0.19 | | | c0.26 | | | 0.18 | | |
| v/c Ratio | 0.18 | 0.58 | | 0.67 | 0.55 | | 0.84 | 0.34 | | 0.65 | 0.54 | |
| Uniform Delay, d1 | 28.3 | 37.8 | | 24.9 | 32.7 | | 20.8 | 25.1 | | 28.8 | 35.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.4 | 3.3 | | 6.3 | 2.1 | | 13.1 | 0.7 | | 4.5 | 2.3 | |
| Delay (s) | 28.7 | 41.1 | | 31.2 | 34.8 | | 33.9 | 25.8 | | 33.3 | 37.5 | |
| Level of Service | C | D | | C | C | | C | C | | C | D | |
| Approach Delay (s) | | 40.2 | | | 33.9 | | | 29.4 | | | 36.2 | |
| Approach LOS | | D | | | C | | | C | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.6 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.72 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 115.0 | | | Sum of lost time (s) | | | | 8.0 | | |
| Intersection Capacity Utilization | | | 82.5% | | | ICU Level of Service | | | | E | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1068: 127th Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | |  |  | |  |  | |
| Volume (vph) | 105 | 603 | 293 | 10 | 376 | 66 | 720 | 355 | 9 | 198 | 625 | 183 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 12 | 12 | 10 | 12 | 9 | 11 | 12 | 9 | 9 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | | 0.95 | | 0.97 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1690 | 2962 | | | 3035 | | 2817 | 3230 | | 1523 | 2873 | |
| Flt Permitted | 0.35 | 1.00 | | | 0.82 | | 0.95 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | 621 | 2962 | | | 2479 | | 2817 | 3230 | | 497 | 2873 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 117 | 670 | 326 | 11 | 418 | 73 | 800 | 394 | 10 | 220 | 694 | 203 |
| RTOR Reduction (vph) | 0 | 66 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 0 | 30 | 0 |
| Lane Group Flow (vph) | 117 | 930 | 0 | 0 | 487 | 0 | 800 | 402 | 0 | 220 | 867 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 8 | | 4 | 4 | | 8 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | | | | 2 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 0% | 2% | 6% | 6% | 2% | 0% | 1% | 3% | 3% |
| Turn Type | Perm | | | Perm | | | Prot | | | pm+pt | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | 6 | | |
| Actuated Green, G (s) | 27.0 | 27.0 | | | 27.0 | | 25.0 | 39.5 | | 27.0 | 27.0 | |
| Effective Green, g (s) | 27.0 | 27.0 | | | 27.0 | | 25.0 | 39.5 | | 27.0 | 27.0 | |
| Actuated g/C Ratio | 0.30 | 0.30 | | | 0.30 | | 0.28 | 0.44 | | 0.30 | 0.30 | |
| Clearance Time (s) | 4.0 | 4.0 | | | 4.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 186 | 889 | | | 744 | | 783 | 1418 | | 292 | 862 | |
| v/s Ratio Prot | | c0.31 | | | | | c0.28 | 0.12 | | 0.10 | c0.30 | |
| v/s Ratio Perm | 0.19 | | | | 0.20 | | | | | 0.12 | | |
| v/c Ratio | 0.63 | 1.05 | | | 0.65 | | 1.02 | 0.28 | | 0.75 | 1.01 | |
| Uniform Delay, d1 | 27.2 | 31.5 | | | 27.4 | | 32.5 | 16.2 | | 26.0 | 31.5 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 0.43 | 0.24 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.5 | 43.0 | | | 2.1 | | 31.9 | 0.3 | | 10.5 | 32.0 | |
| Delay (s) | 33.7 | 74.5 | | | 29.5 | | 45.9 | 4.3 | | 36.5 | 63.5 | |
| Level of Service | C | E | | | C | | D | A | | D | E | |
| Approach Delay (s) | | 70.2 | | | 29.5 | | | 32.0 | | | 58.2 | |
| Approach LOS | | E | | | C | | | C | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 49.9 | | | | HCM Level of Service | | | D | | |
| HCM Volume to Capacity ratio | | | 1.03 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | | Sum of lost time (s) | | | 11.0 | | |
| Intersection Capacity Utilization | | | 100.7% | | | | ICU Level of Service | | | G | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |
























Halsted Rail Alternative Mitigated (2030) PM Peak
WRH

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1069: Vermont Street & Halsted Street

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  |  |  |  |  |
| Volume (vph) | 67 | 198 | 222 | 337 | 167 | 28 | 414 | 1147 | 993 | 35 | 866 | 70 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 16 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1710 | 2040 | 1491 | 3130 | 1991 | | 1676 | 3320 | 1429 | 1437 | 3320 | 1485 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.15 | 1.00 | 1.00 | 0.15 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1710 | 2040 | 1491 | 3130 | 1991 | | 264 | 3320 | 1429 | 222 | 3320 | 1485 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 69 | 204 | 229 | 347 | 172 | 29 | 427 | 1182 | 1024 | 36 | 893 | 72 |
| RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 8 | 0 | 0 | 0 | 143 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 69 | 204 | 208 | 347 | 193 | 0 | 427 | 1182 | 881 | 36 | 893 | 32 |
| Confl. Peds. (#/hr) | 3 | | 20 | 20 | | 3 | 2 | | 3 | 3 | | 2 |
| Confl. Bikes (#/hr) | | | 1 | 1 | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 6% | 0% | 0% | 2% | 3% | 6% | 19% | 3% | 2% |
| Turn Type | Prot | | pm+ov | Prot | | | pm+pt | | pm+ov | pm+pt | | pm+ov |
| Protected Phases | 7 | 4 | 5 | 3 | 8 | | 5 | 2 | 3 | 1 | 6 | 7 |
| Permitted Phases | | | 4 | | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 12.2 | 15.1 | 29.7 | 15.0 | 17.9 | | 46.9 | 39.5 | 54.5 | 29.7 | 27.3 | 39.5 |
| Effective Green, g (s) | 12.2 | 15.1 | 29.7 | 15.0 | 17.9 | | 46.9 | 39.5 | 54.5 | 29.7 | 27.3 | 39.5 |
| Actuated g/C Ratio | 0.14 | 0.17 | 0.33 | 0.17 | 0.20 | | 0.52 | 0.44 | 0.61 | 0.33 | 0.30 | 0.44 |
| Clearance Time (s) | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 4.0 | 4.0 | 5.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 232 | 342 | 492 | 522 | 396 | | 367 | 1457 | 865 | 106 | 1007 | 718 |
| v/s Ratio Prot | 0.04 | c0.10 | 0.07 | 0.11 | 0.10 | | c0.19 | 0.36 | c0.17 | 0.01 | 0.27 | 0.01 |
| v/s Ratio Perm | | | 0.07 | | | | c0.42 | | 0.45 | 0.10 | | 0.02 |
| v/c Ratio | 0.30 | 0.60 | 0.42 | 0.66 | 0.49 | | 1.16 | 0.81 | 1.02 | 0.34 | 0.89 | 0.04 |
| Uniform Delay, d1 | 35.0 | 34.6 | 23.5 | 35.1 | 32.0 | | 29.6 | 22.0 | 17.8 | 38.6 | 29.9 | 14.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.73 | 0.34 | 0.13 |
| Incremental Delay, d2 | 0.7 | 2.8 | 0.6 | 3.2 | 0.9 | | 99.4 | 5.0 | 35.4 | 0.2 | 1.2 | 0.0 |
| Delay (s) | 35.8 | 37.4 | 24.1 | 38.3 | 32.9 | | 129.0 | 27.0 | 53.1 | 28.2 | 11.5 | 1.9 |
| Level of Service | D | D | C | D | C | | F | C | D | C | B | A |
| Approach Delay (s) | | 31.1 | | | 36.3 | | | 53.7 | | | 11.4 | |
| Approach LOS | | C | | | D | | | D | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 40.2 | | | HCM Level of Service | | | D | | | |
| HCM Volume to Capacity ratio | | | 0.99 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 13.0 | | | |
| Intersection Capacity Utilization | | | 91.5% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Halsted Rail Alternative Mitigated (2030) PM Peak
WRH






Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | EBL | EBT | WBL | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|---|---|---|------|------|------|---|------|------|---|------|
| Lane Configurations | |  |  |  | | | |  | | |  | |
| Volume (vph) | 2 | 785 | 455 | 550 | 18 | 3 | 10 | 9 | 47 | 9 | 0 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 10 | 10 | 10 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 5.0 | 3.0 | 5.0 | | | | 4.5 | | | 4.5 | |
| Lane Util. Factor | | 0.95 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | 1.00 | 1.00 | | | | 0.98 | | | 0.97 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 1.00 | 1.00 | | | | 0.91 | | | 0.94 | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | | | | 0.99 | | | 0.97 | |
| Satd. Flow (prot) | | 3160 | 1565 | 1652 | | | | 1795 | | | 1793 | |
| Flt Permitted | | 0.95 | 0.14 | 1.00 | | | | 0.93 | | | 0.87 | |
| Satd. Flow (perm) | | 3015 | 234 | 1652 | | | | 1681 | | | 1609 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 2 | 826 | 479 | 579 | 19 | 3 | 11 | 9 | 49 | 9 | 0 | 3 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 0 | 828 | 479 | 597 | 0 | 0 | 0 | 52 | 0 | 0 | 12 | 0 |
| Confl. Peds. (#/hr) | 7 | | 4 | | 7 | | 7 | | 2 | 2 | | 7 |
| Confl. Bikes (#/hr) | | | | | | | 2 | | 2 | 2 | | 2 |
| Heavy Vehicles (%) | 0% | 1% | 2% | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | | pm+pt | | | Perm | Perm | | | Perm | | |
| Protected Phases | | 8 | 7 | 4 | | | | 2 | | | 6 | |
| Permitted Phases | 8 | | 4 | | | 2 | 2 | | | 6 | | |
| Actuated Green, G (s) | | 25.1 | 67.3 | 67.3 | | | | 6.7 | | | 6.7 | |
| Effective Green, g (s) | | 25.1 | 67.3 | 67.3 | | | | 6.7 | | | 6.7 | |
| Actuated g/C Ratio | | 0.30 | 0.81 | 0.81 | | | | 0.08 | | | 0.08 | |
| Clearance Time (s) | | 5.0 | 3.0 | 5.0 | | | | 4.5 | | | 4.5 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 906 | 813 | 1331 | | | | 135 | | | 129 | |
| v/s Ratio Prot | | | 0.28 | 0.36 | | | | | | | | |
| v/s Ratio Perm | | c0.27 | 0.20 | | | | | c0.03 | | | 0.01 | |
| v/c Ratio | | 0.91 | 0.59 | 0.45 | | | | 0.38 | | | 0.10 | |
| Uniform Delay, d1 | | 28.2 | 10.6 | 2.5 | | | | 36.4 | | | 35.6 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 15.2 | 1.1 | 0.2 | | | | 1.8 | | | 0.3 | |
| Delay (s) | | 43.3 | 11.7 | 2.7 | | | | 38.3 | | | 35.9 | |
| Level of Service | | D | B | A | | | | D | | | D | |
| Approach Delay (s) | | 43.3 | | 6.7 | | | | 38.3 | | | 35.9 | |
| Approach LOS | | D | | A | | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 29.0 | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | | | 0.89 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 83.5 | Sum of lost time (s) | | | 12.5 | | | | | |
| Intersection Capacity Utilization | | | 82.3% | ICU Level of Service | | | E | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1070: 127th Street & Wallace Street

1/14/2013



| Movement | SBR2 | NER |
|------------------------|------|-------|
| Lane Configurations | | FF |
| Volume (vph) | 5 | 1155 |
| Ideal Flow (vphpl) | 1800 | 1800 |
| Lane Width | 12 | 12 |
| Total Lost time (s) | | 3.0 |
| Lane Util. Factor | | 0.88 |
| Frpb, ped/bikes | | 1.00 |
| Flpb, ped/bikes | | 1.00 |
| Frt | | 0.85 |
| Flt Protected | | 1.00 |
| Satd. Flow (prot) | | 2693 |
| Flt Permitted | | 1.00 |
| Satd. Flow (perm) | | 2693 |
| Peak-hour factor, PHF | 0.95 | 0.95 |
| Adj. Flow (vph) | 5 | 1216 |
| RTOR Reduction (vph) | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1216 |
| Confl. Peds. (#/hr) | | |
| Confl. Bikes (#/hr) | | |
| Heavy Vehicles (%) | 0% | 0% |
| Turn Type | | Over |
| Protected Phases | | 7 |
| Permitted Phases | | |
| Actuated Green, G (s) | | 39.2 |
| Effective Green, g (s) | | 39.2 |
| Actuated g/C Ratio | | 0.47 |
| Clearance Time (s) | | 3.0 |
| Vehicle Extension (s) | | 3.0 |
| Lane Grp Cap (vph) | | 1264 |
| v/s Ratio Prot | | c0.45 |
| v/s Ratio Perm | | |
| v/c Ratio | | 0.96 |
| Uniform Delay, d1 | | 21.4 |
| Progression Factor | | 1.00 |
| Incremental Delay, d2 | | 17.0 |
| Delay (s) | | 38.4 |
| Level of Service | | D |
| Approach Delay (s) | | |
| Approach LOS | | |
| Intersection Summary | | |

HCM Signalized Intersection Capacity Analysis

1071: 127th Street & State Street

1/14/2013



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|-------|-------|------|------|-------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 355 | 1614 | 774 | 63 | 96 | 257 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1660 | 3320 | 3283 | | 1660 | 1485 |
| Flt Permitted | 0.25 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | 439 | 3320 | 3283 | | 1660 | 1485 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 394 | 1793 | 860 | 70 | 107 | 286 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 0 | 257 |
| Lane Group Flow (vph) | 394 | 1793 | 927 | 0 | 107 | 29 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | pm+pt | | | Perm | | |
| Protected Phases | 7 | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | 115.8 | 115.8 | 91.3 | | 14.2 | 14.2 |
| Effective Green, g (s) | 115.8 | 115.8 | 91.3 | | 14.2 | 14.2 |
| Actuated g/C Ratio | 0.84 | 0.84 | 0.66 | | 0.10 | 0.10 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 550 | 2786 | 2172 | | 171 | 153 |
| v/s Ratio Prot | c0.11 | 0.54 | 0.28 | | c0.06 | |
| v/s Ratio Perm | c0.50 | | | | | 0.02 |
| v/c Ratio | 0.72 | 0.64 | 0.43 | | 0.63 | 0.19 |
| Uniform Delay, d1 | 6.5 | 3.9 | 11.0 | | 59.4 | 56.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.4 | 1.2 | 0.6 | | 7.0 | 0.6 |
| Delay (s) | 10.9 | 5.0 | 11.6 | | 66.3 | 57.3 |
| Level of Service | B | A | B | | E | E |
| Approach Delay (s) | | 6.1 | 11.6 | | 59.7 | |
| Approach LOS | | A | B | | E | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 13.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 138.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 61.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1072: 127th Street & Michigan Avenue

1/14/2013

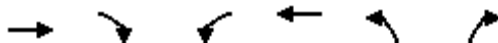


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑ | ↑ |
| Volume (vph) | 104 | 1609 | 747 | 152 | 265 | 94 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 10 | 11 | 12 | 10 | 10 |
| Total Lost time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.99 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | | 1.00 | 0.97 | | 1.00 | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 3122 | 3106 | | 1506 | 1341 |
| Flt Permitted | | 0.76 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 2389 | 3106 | | 1506 | 1341 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 109 | 1694 | 786 | 160 | 279 | 99 |
| RTOR Reduction (vph) | 0 | 0 | 13 | 0 | 0 | 81 |
| Lane Group Flow (vph) | 0 | 1803 | 933 | 0 | 279 | 18 |
| Confl. Peds. (#/hr) | 2 | | | 2 | | 1 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 10% | 6% | 5% |
| Turn Type | Perm | | | | Perm | |
| Protected Phases | | 4 | 8 | | 6 | |
| Permitted Phases | 4 | | | | | 6 |
| Actuated Green, G (s) | | 99.0 | 99.0 | | 23.0 | 23.0 |
| Effective Green, g (s) | | 99.0 | 99.0 | | 23.0 | 23.0 |
| Actuated g/C Ratio | | 0.76 | 0.76 | | 0.18 | 0.18 |
| Clearance Time (s) | | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 1819 | 2365 | | 266 | 237 |
| v/s Ratio Prot | | | 0.30 | | c0.19 | |
| v/s Ratio Perm | | c0.75 | | | | 0.01 |
| v/c Ratio | | 0.99 | 0.39 | | 1.05 | 0.07 |
| Uniform Delay, d1 | | 15.1 | 5.3 | | 53.5 | 44.6 |
| Progression Factor | | 1.00 | 1.00 | | 0.80 | 1.25 |
| Incremental Delay, d2 | | 19.1 | 0.5 | | 65.0 | 0.5 |
| Delay (s) | | 34.2 | 5.8 | | 107.9 | 56.2 |
| Level of Service | | C | A | | F | E |
| Approach Delay (s) | | 34.2 | 5.8 | | 94.3 | |
| Approach LOS | | C | A | | F | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 32.9 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 1.00 | | | |
| Actuated Cycle Length (s) | | | 130.0 | | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | | | 102.6% | | ICU Level of Service | G |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1073: 130th Street & Indiana Avenue

1/14/2013

























| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|--------|-------|----------------------|------|
| Lane Configurations | ↩ | | ↩ | ↩ | ↩ | ↩ |
| Volume (vph) | 1404 | 329 | 121 | 771 | 222 | 58 |
| Ideal Flow (vphpl) | 2300 | 1800 | 1800 | 2300 | 1800 | 1800 |
| Lane Width | 15 | 12 | 14 | 16 | 15 | 12 |
| Total Lost time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 0.99 |
| Flpb, ped/bikes | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.97 | | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 2417 | | 1788 | 2506 | 1758 | 1509 |
| Flt Permitted | 1.00 | | 0.04 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 2417 | | 69 | 2506 | 1758 | 1509 |
| Peak-hour factor, PHF | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Adj. Flow (vph) | 1433 | 336 | 123 | 787 | 227 | 59 |
| RTOR Reduction (vph) | 5 | 0 | 0 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 1764 | 0 | 123 | 787 | 227 | 9 |
| Confl. Peds. (#/hr) | | | | | | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 7% | 0% |
| Turn Type | | | pm+pt | | | Perm |
| Protected Phases | 4 | | 3 | 8 | 2 | |
| Permitted Phases | | | 8 | | | 2 |
| Actuated Green, G (s) | 106.0 | | 116.0 | 116.0 | 22.1 | 22.1 |
| Effective Green, g (s) | 106.0 | | 116.0 | 116.0 | 22.1 | 22.1 |
| Actuated g/C Ratio | 0.72 | | 0.78 | 0.78 | 0.15 | 0.15 |
| Clearance Time (s) | 5.0 | | 3.0 | 5.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1730 | | 135 | 1963 | 262 | 225 |
| v/s Ratio Prot | c0.73 | | c0.04 | 0.31 | c0.13 | |
| v/s Ratio Perm | | | 0.67 | | | 0.01 |
| v/c Ratio | 1.02 | | 0.91 | 0.40 | 0.87 | 0.04 |
| Uniform Delay, d1 | 21.0 | | 54.7 | 5.1 | 61.6 | 53.9 |
| Progression Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 26.6 | | 51.3 | 0.1 | 24.6 | 0.1 |
| Delay (s) | 47.7 | | 106.0 | 5.2 | 86.1 | 54.0 |
| Level of Service | D | | F | A | F | D |
| Approach Delay (s) | 47.7 | | | 18.8 | 79.5 | |
| Approach LOS | D | | | B | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 41.9 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.99 | | | |
| Actuated Cycle Length (s) | | | 148.1 | | Sum of lost time (s) | 13.0 |
| Intersection Capacity Utilization | | | 109.3% | | ICU Level of Service | H |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1074: 130th Street & Ellis Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  | |  |  | |  |  |
| Volume (vph) | 1 | 1680 | 84 | 112 | 875 | 1 | 73 | 0 | 157 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 15 | 13 | 11 | 11 | 12 | 12 | 12 | 16 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | | 4.0 | 4.0 | | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 | | | |
| Satd. Flow (prot) | 1881 | 3431 | 1479 | 1589 | 3320 | 1530 | | 1938 | 1500 | | | |
| Flt Permitted | 0.29 | 1.00 | 1.00 | 0.08 | 1.00 | 1.00 | | 0.76 | 1.00 | | | |
| Satd. Flow (perm) | 583 | 3431 | 1479 | 128 | 3320 | 1530 | | 1545 | 1500 | | | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 1 | 1867 | 93 | 124 | 972 | 1 | 81 | 0 | 174 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 140 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1 | 1867 | 66 | 124 | 972 | 1 | 0 | 81 | 34 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 3% | 0% | 4% | 3% | 0% | 0% | 0% | 2% | 0% | 0% | 0% |
| Turn Type | Perm | | Perm | custom | | custom | Perm | | Perm | Perm | | |
| Protected Phases | | 4 | | 3 | 3 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | |
| Actuated Green, G (s) | 49.4 | 49.4 | 49.4 | 67.1 | 67.1 | 67.1 | | 9.9 | 9.9 | | | |
| Effective Green, g (s) | 49.4 | 49.4 | 49.4 | 67.1 | 67.1 | 67.1 | | 9.9 | 9.9 | | | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.79 | 0.79 | 0.79 | | 0.12 | 0.12 | | | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 3.0 | | 4.0 | | 4.0 | 4.0 | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | | |
| Lane Grp Cap (vph) | 339 | 1994 | 860 | 354 | 2621 | 1208 | | 180 | 175 | | | |
| v/s Ratio Prot | | c0.54 | | 0.06 | c0.29 | | | | | | | |
| v/s Ratio Perm | 0.00 | | 0.04 | 0.22 | | 0.00 | | c0.05 | 0.02 | | | |
| v/c Ratio | 0.00 | 0.94 | 0.08 | 0.35 | 0.37 | 0.00 | | 0.45 | 0.20 | | | |
| Uniform Delay, d1 | 7.5 | 16.4 | 7.8 | 14.8 | 2.7 | 1.9 | | 35.0 | 34.0 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.0 | 9.9 | 0.2 | 0.6 | 0.1 | 0.0 | | 1.8 | 0.6 | | | |
| Delay (s) | 7.5 | 26.2 | 8.0 | 15.4 | 2.8 | 1.9 | | 36.8 | 34.5 | | | |
| Level of Service | A | C | A | B | A | A | | D | C | | | |
| Approach Delay (s) | | 25.4 | | | 4.2 | | | 35.2 | | | 0.0 | |
| Approach LOS | | C | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.1 | | | | HCM Level of Service | | B | | | |
| HCM Volume to Capacity ratio | | | 0.76 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 85.0 | | | | Sum of lost time (s) | | 11.0 | | | |
| Intersection Capacity Utilization | | | 70.6% | | | | ICU Level of Service | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

1942: 111th Street & Langley Avenue

1/14/2013




















| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|--------|------|----------------------|------|
| Lane Configurations | | ↑↑ | ↑↑ | | ↑↑ | |
| Volume (vph) | 9 | 952 | 843 | 30 | 71 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 10 | 10 | 10 | 10 | 10 | 10 |
| Total Lost time (s) | | 5.0 | 5.0 | | 3.0 | |
| Lane Util. Factor | | 0.95 | 0.95 | | 1.00 | |
| Frt | | 1.00 | 0.99 | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3098 | 3083 | | 1533 | |
| Flt Permitted | | 0.94 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 2923 | 3083 | | 1533 | |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 10 | 1058 | 937 | 33 | 79 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 3 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 1068 | 967 | 0 | 86 | 0 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% |
| Turn Type | Perm | | | | | |
| Protected Phases | | 4 | 8 2 11 | | 5 | |
| Permitted Phases | 4 | | | | | |
| Actuated Green, G (s) | | 33.0 | 64.0 | | 7.0 | |
| Effective Green, g (s) | | 33.0 | 64.0 | | 7.0 | |
| Actuated g/C Ratio | | 0.37 | 0.71 | | 0.08 | |
| Clearance Time (s) | | 5.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1072 | 2192 | | 119 | |
| v/s Ratio Prot | | | c0.31 | | c0.06 | |
| v/s Ratio Perm | | c0.37 | | | | |
| v/c Ratio | | 1.00 | 0.44 | | 0.72 | |
| Uniform Delay, d1 | | 28.4 | 5.5 | | 40.5 | |
| Progression Factor | | 1.00 | 0.01 | | 1.00 | |
| Incremental Delay, d2 | | 26.6 | 0.2 | | 31.1 | |
| Delay (s) | | 55.0 | 0.2 | | 71.7 | |
| Level of Service | | E | A | | E | |
| Approach Delay (s) | | 55.0 | 0.2 | | 71.7 | |
| Approach LOS | | E | A | | E | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 30.8 | | HCM Level of Service | C |
| HCM Volume to Capacity ratio | | | 0.76 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 25.0 |
| Intersection Capacity Utilization | | | 46.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

HCM Signalized Intersection Capacity Analysis

1955: 115th Street & Cottage Grove Avenue

1/14/2013

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (vph) | 58 | 500 | 0 | 1 | 582 | 39 | 3 | 2 | 28 | 202 | 0 | 138 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 11 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.94 | | | 1.00 | 0.97 |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | 1.00 |
| Frt | | 1.00 | | | 0.99 | | | 0.88 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 1772 | | | 3341 | | | 1463 | | | 1667 | 1346 |
| Flt Permitted | | 0.87 | | | 0.95 | | | 0.77 | | | 0.86 | 1.00 |
| Satd. Flow (perm) | | 1553 | | | 3191 | | | 1132 | | | 1515 | 1346 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 64 | 556 | 0 | 1 | 647 | 43 | 3 | 2 | 31 | 224 | 0 | 153 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 28 | 0 | 0 | 0 | 109 |
| Lane Group Flow (vph) | 0 | 620 | 0 | 0 | 686 | 0 | 0 | 8 | 0 | 0 | 224 | 44 |
| Confl. Peds. (#/hr) | 60 | | 44 | 44 | | 60 | 14 | | 10 | 10 | | 14 |
| Confl. Bikes (#/hr) | 1 | | | | | 1 | | | | | | |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 3% | 20% | 0% | 0% | 1% | 0% | 7% |
| Turn Type | Perm | | | Prot | | | Perm | | | pm+pt | | Perm |
| Protected Phases | | 4 | | 3 | 3 4 | | | 1 | | 2 | 1 2 | |
| Permitted Phases | 4 | | | | 3 | | 1 | 1 | | 1 2 | | 1 2 |
| Actuated Green, G (s) | | 38.4 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Effective Green, g (s) | | 38.4 | | | 52.0 | | | 9.0 | | | 23.0 | 26.0 |
| Actuated g/C Ratio | | 0.43 | | | 0.58 | | | 0.10 | | | 0.26 | 0.29 |
| Clearance Time (s) | | 4.0 | | | | | | 3.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 663 | | | 1866 | | | 113 | | | 411 | 389 |
| v/s Ratio Prot | | | | | c0.06 | | | | | | c0.08 | |
| v/s Ratio Perm | | c0.40 | | | 0.16 | | | 0.01 | | | c0.05 | 0.03 |
| v/c Ratio | | 0.94 | | | 0.37 | | | 0.07 | | | 0.55 | 0.11 |
| Uniform Delay, d1 | | 24.6 | | | 10.2 | | | 36.7 | | | 29.0 | 23.5 |
| Progression Factor | | 1.00 | | | 1.04 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 22.2 | | | 0.0 | | | 0.3 | | | 1.5 | 0.1 |
| Delay (s) | | 46.8 | | | 10.7 | | | 37.0 | | | 30.5 | 23.7 |
| Level of Service | | D | | | B | | | D | | | C | C |
| Approach Delay (s) | | 46.8 | | | 10.7 | | | 37.0 | | | 27.7 | |
| Approach LOS | | D | | | B | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 27.9 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.70 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | Sum of lost time (s) | | | 14.0 | | | |
| Intersection Capacity Utilization | | | 78.2% | | | ICU Level of Service | | | D | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Appendix F

2014-2015 Red Line Extension Project Update

2014-2015 Red Line Extension Project Update

From 2012-2014, CTA evaluated benefits and impacts of four alternatives: the No Build Alternative, the Bus Rapid Transit Alternative (along Michigan Avenue), the Union Pacific Railroad (UPRR) Rail Alternative, and the Halsted Alternative. CTA evaluated three options of the UPRR Rail Alternative: Right-of-Way Option, East Option, and West Option. CTA also evaluated two options of the UPRR Rail Alternative 130th Street station: a South Station Option and a West Station Option. Based on the project description provided in Section 2 of this technical memorandum, CTA analyzed the impacts of these alternatives and station options. The benefits and impacts are included in the technical memoranda prepared in 2012-2014.

In August 2014, based on the technical analysis and public input, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. Additional conceptual engineering was conducted on the UPRR Rail Alternative to refine the East and West Option alignments. In addition, CTA is considering only the South Station Option of the 130th Street Station.

In late 2014 and early 2015, CTA conducted additional engineering and revised assumptions on the East and West Options to refine the alignments. The refinement of the East and West Options consisted of the following items:

- For the segment of the alignment along I-57, CTA shifted the proposed alignment from the median of I-57 to the north side of I-57 within the existing expressway right-of-way. The construction would be less complex, safer for construction workers, and have a shorter duration. The shift would also allow for fewer impacts to Wendell Smith Park for the East Option, and would allow for no permanent impacts to Wendell Smith Park for the West Option.
- CTA modified the curve speeds as the alignment heads south from I-57 along the UPRR tracks. The curve speed for both the East and West Options would be 35 mph.
- CTA shifted the East Option alignment near 103rd Street station to minimize impacts to Block Park and the Roseland Pumping Station.
- CTA modified the curves south of 103rd Street for both the East and West Options to 55 mph to maximize the train speed.
- CTA refined the layout of the 120th Street yard and shop to optimize yard operations. The refined layout of the yard would accommodate 340 train cars.

The refinement of the East and West Option alignments minimizes potential impacts to parks while providing flexibility for future design phases. The Draft Environmental Impact Statement contains the benefits and impacts of the refined East and West Option alignments and supersedes information presented in other chapters of this technical memorandum.

The refined East and West Option alignments would have no additional or different impacts from those described in the technical memoranda for the following resource areas: construction, transportation, land use and economic development, historic and cultural resources, safety and security, hazardous materials, indirect and cumulative, air quality, floodplains, vegetation and wildlife habitat, threatened and endangered species, and geology and soils.